PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH,

FOR THE

MONTH OF OCTOBER 1893.

Printed by Authority.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.
1893.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT,

IRRIGATION BRANCH,

FOR THE MONTH OF OCTOBER 1893.

Irrigation.
Account.

READ—the following paper :—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, VI Circle, to the Chief Engineer, Public Works Department, dated Trichinopoly, 19th September 1893, No. 275 P.R.

I have the honour to forward, for the sanction of Government, the completion reports for the undermentioned three works in No. II Periyár Division, Periyár project :—

(I) Culvert at Kannimar odai at 26 miles 3 furlongs and 350 feet in VII Reach.
(II) Culvert to Valayapathan odai at 27 miles 6 furlongs and 100 feet in IX Reach.
(III) Excavation of main channel, IX Reach.

2. Revised estimates of Rs. 6,450, Rs. 6,800, and Rs. 10,000, for the above three works were sanctioned respectively in G.Os., Nos. 538 I. of 3rd July 1891, 706 I. of 11th September 1891, and 227 I., dated 8th March 1892; the first was completed in June 1893, and the other two in May 1893, the outlay in each case being Rs. 6,509, Rs. 7,093, and Rs. 10,099 respectively, that is, Rs. 59, Rs. 293, and Rs. 99 in excess of the sanctioned estimates.

3. The cause of the excess in each of the three cases is noted below :—

Work No I.

	Excess.
	RS.
(a) Increased rate given for rocky soil in foundation	211
(b) Want of provision in the estimate for diversion cut	245
(c) Do. do. for approaches	756
Total ...	1,212
Deduct savings in the item of burnt stone in mortar and other sub-heads under Rs. 500	1,153
Net excess ...	59

Work No. II.

(*a*) Increased rate given for hard rocky soil cut through and blasted ...	302
(*b*) Excess over sub-heads under Rs. 500	412
(*c*) Excess quantity of work done under the sub-head "concrete broken stone in surki mortar"	16
(*d*) Want of provision in the estimate for approaches	724
Total ...	1,454
Deduct saving in the item of "coursed rubble in mortar"	1,161
Net excess ...	293

Work No. III.

	Excess. RS.
(*a*) Excess quantity of work done under the sub-head "earth" ...	1,437
(*b*) Do. do. under "gravel"	443
(*c*) Do. do. under "soft rock"	1,016
(*d*) Do. do. rock blasting	458
Total ...	3,354
Deduct savings in the items of hard rock, banking earth, banking gravel and other sub-heads under Rs. 500	3,255
Net excess ...	99

4. The completion reports have been duly verified by the Examiner of Public Works Accounts.

5. I beg also to submit, for sanction of the excesses, the following extract from the completion statements of No. II Periyár division for the months of June and July 1893, which have been verified by the Examiner :—

Name of works.	Amount of estimate.	Authority sanctioning the estimate.	Outlay.	Excess over the estimate.
	RS.		RS.	RS.
Improving the store-shed at Peranai to provide also as accommodation as rest-house, I Reach.	1,150	Superintending Engineer's register No. 57 of 1892-93	1,206	56
Maintenance and repairs to main channel, X Reach	350	Superintending Engineer's register No. 128 of 1892-93	360	10
Rooting out Sambai or bulrush grass and clearing silt, V Reach	350	Superintending Engineer's register No. 117 of 1892-93	399	49
Protection at the head of diversion cut and revetment to superpassage at Kuthikal odai, VI Reach	315	Superintending Engineer's register No. 5 of 1893-94	333	18
Maintaining main channel, VII Reach ..	470	Superintending Engineer's register No. 84 of 1892-93	473	3
Total ..	..		..	136

ORDER—dated 2nd October 1893, No. 849 I., Public Works.

The Examiner of Public Works Accounts is authorised to pass the expenditure incurred on the works referred to in the foregoing letter from the Superintending Engineer, VI Circle, the total excess outlay of Rs. 587 being met from the balance of the amount reserved for unforeseen works of the Periyár Project, which will then be reduced to Rs. 26,192.

2. This sanction is registered as No. 134 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle, with three enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 2nd.

Recd. *Encl.*

G.O., 2nd Oct. 1893, No. 849 I.

OCTOBER.

Periyar Project

The Examiner authorised to pass the excess outlay of Rs. 587 incurred on certain works connected with No. II Periyár division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Proceedings of the Board of Revenue (Separate Revenue), dated 15th August 1893, Mis. No. 3229.

Read—the following letter from J. N. ATKINSON, Esq., Acting Collector of Kistna, to the Secretary to the Commissioner of Salt, Abkári and Separate Revenue, dated Masulipatam, 3rd August 1893, D. No. 1863-Acc.

I have the honour to state that, under Board's Proceedings, Mis. No. 2797, dated 4th September 1888, certain individuals of Bápatla taluk were permitted to cut casuarina trees, float the timber by sea along the coast to the Romperu creek that connects the Buckingham canal with the sea, and thence to export it to Madras or other places by canal.

2. The Assistant Superintendent of Sea Customs, Ipurupálem, now reports that the Lock Superintendent of Pedda Ganjám used to take cognizance hitherto of passes issued by the Custom-house officers with a view to prevent the smuggling of sea drift wood gathered in the Romperu creek, which is the place of export of casuarina timber, but that the Executive Engineer, Kistna Western division, put a stop to the existing practice. The Executive Engineer in his No. 1276, dated 23rd February 1892, informed the Lock Superintendent that he could only take cognizance of boat licenses or toll tickets and not of custom passes, and that the boats would be allowed to pass the lock, provided they are properly licensed, irrespective of the nature of the cargo carried in them.

3. I have the honour to request that the Board may be pleased to move the Government to issue necessary instructions to the Public Works Department to see that no drift wood gathered in the Romperu creek or other dutiable goods are smuggled past the Pedda Ganjám lock. I am aware that this will put in the hands of the Lock Superintendent a tempting means of illicitly increasing his income. But we cannot leave open so wide a door to smuggling, and if the services of the Lock Superintendent are not to be enlisted as a customs preventive officer, it seems to me that the export of timber *viâ* the Romperu creek and Buckingham canal must stop.

4. The Assistant Sea Custom Superintendent's letter, with two enclosures, and copy of the Executive Engineer's endorsement above alluded to are herein enclosed.

Resolution—dated 15th August 1893, Mis. No. 3229.

Submitted to Government. The Board supports the Collector's recommendation.

(A true Copy and Extract.)

(Signed) EDMUND MILLETT,
Assistant Secretary.

Mis. No. 3354, Revenue.

Transferred to the Public Works Department for the issue of the necessary orders.

OOTACAMUND,
12th September 1893.

(Signed) R. C. C. CARR,
Under Secy. to Government.

ORDER—dated 4th October 1893, No. 851 I., Public Works.

The Superintending Engineer, II Circle, will issue the necessary instructions on the point brought forward by the Board of Revenue regarding the scrutiny of sea custom passes of boats containing drift wood passing through the Pedda Ganjám lock.

2. It may be noticed in this connection that the Executive Engineer, Kistna Western division, was perfectly willing to undertake this duty as expressed in his memorandum of the 23rd February 1893, and it is not understood why the Assistant Superintendent of Sea Customs should have deferred to move for the necessary orders to be issued till four months had elapsed.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Superintending Engineer, II Circle.
„ Chief Engineer for Irrigation.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 4th.

Recd. *Encl.*

G.O., 4th Oct. 1893, No. 851 I.

OCTOBER.

Sea Custom Passes

The Superintending Engineer, II Circle, directed to issue instructions regarding the scrutiny of — of boats containing drift wood passing through the Pedda Ganjám lock, Kistna district.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From J. W. MARTIN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 6th September 1893, No. 1394 K.S.

I have the honour to forward herewith, for your approval and sanction of Government, plan and estimate, amounting to Rs. 7,240, for the excavation of Kamalapuram North side channel, Bantumilli canal, and to request that you will be so good as to obtain the sanction of Government from the balance available for unforeseen works of the Kistna delta system as per statement No. II sent to you with this office No. 1111, dated 30th July 1893.

2. The report which accompanies the estimate explains the necessity for the work.

ENCLOSURES.

REPORT to accompany an estimate for the proposed Kamalapuram North side channel.

	RS.
Estimate	7,240

The second reach of the Bantumilli canal is designed to be purely a navigation channel with still water maintained at a level of + 5. During the season of 1891 the area irrigated from this reach was 3,163 acres, of which nearly 2,000 acres was by means of spouts in the left bank in the first seven miles below Kamalapuram lock. The irrigation dates back many years, but extensions from time to time were allowed with the idea, no doubt, that, when the second reach was completed by the extension to the Upputeru, other means of supply would be provided, or that the ryots would be compelled to give up wet cultivation. Subsequent detailed investigation shows that none of the existing channels can be conveniently enlarged and extended to take up the cultivated area now supplied with water directly from the main canal, and as it is neither desirable nor probably possible to compel the ryots to abandon their lands, it is necessary that some modifications be made in the sanctioned arrangements which as yet have never been in force.

The present proposals only deal with the irrigation from the left bank in the first seven miles.

The estimate provides for the construction of a side channel along the left bank of the second reach of the Bantumilli canal for a length of 7 miles 6 furlongs. The water will be drawn off above Kamalapuram lock through a head sluice situated between, and in line with, the lock weir and the head sluice of the main distributary.

As the difference in level between the water in front and rear of the sluice will vary from 2 to 4 feet depending on the depth of water maintained above the lock, a drop wall fitted with a tambojii having a vent 2 feet × 1 foot is provided. In other respects the sluice is of the ordinary type with a 9 feet roadway for the cart traffic which crosses the canal by the tail bridge of the lock.

The side channel is designed to supply water to an ultimate area of 3,500 acres, of which over 1,500 acres will be new cultivation on waste lands not hitherto commanded by the main canal.

At the head the channel runs in deep cutting for a few yards and then in bank throughout its entire length. The F.S.L. at the head will be + 8 and the surface fall 0·5 ft. per mile. The depth at the head will be $3\frac{1}{2}$ feet, decreasing to 3 feet at 4 miles and 2·5 feet at 5 miles $3\frac{1}{2}$ furlongs. The bottom width at the head will be 9 feet, decreasing to 3 feet at the tail end

The right bank will be formed by the left bank of the main canal, and provision has been made in taking up land for a berm 30 feet wide outside the toe of the present bank to allow room for the deposit of silt taken out of the canal. As the canal bank (*vide* sections) is unnecessarily high and wide, the left bank of the channel will be formed from earth cut away from the outer slope of the canal bank which will obviate the necessity of taking up land for side pits and will give additional room for the deposit of silt clearances. In a side channel so long as this one it is necessary to have masonry sluices to control the distribution of water; otherwise the branch channels at the head draw off too much water and the lands at the tail end suffer from short supply. Provision has accordingly been made for six masonry sluices of the face wall type fitted with shutters and screw gearing; they will be fixed at the head of the bothis which now draw water direct from the canal.

The result which is anticipated from the carrying out of these proposals is (1) the simplification of the problem of dealing with the irrigation under the second reach of the Bantumilli canal since it will enable 11 sluices and spouts to be removed from the left bank; (2) the lands to be irrigated will be properly commanded and the six minor sluices will control the supply and prevent the waste which now occurs; (3) an additional area of more than 1,500 acres will be brought under cultivation, all of which is at present waste.

(Signed) A. CHATTERTON,
Ex. Engr., Gudiváda Division.

27th May 1893.

ESTIMATE Form—Abstract, classified.

Sub-head.	Names of works.	Amount of estimate for individual work.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2		4	5	6
	CAPITAL EXPENDITURE.	RS.	RS.	RS.	RS.
	PUBLIC WORKS NOT CHARGED TO REVENUE.				
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	Kistna Delta System.				
	Eastern Section.				
	I. Works.				
	3. Distributaries.				
	Bantumilli Canal.				
	Kamalapuram North Side Channel.				
2. Land	1. Compensation for land	1,456	1,456		
3. Works	2. Constructing head sluice	1,040			
Do.	3. No. 1 sluice at 1 mile 7 furlongs 530 feet ..	185			
Do.	4. ,, 2 ,, 2 miles 7 ,, 150 ,, ..	179			
Do.	5. ,, 3 ,, 3 ,, 7 ,, 400 ,, ..	175			
Do.	6. ,, 4 ,, 4 ,, 5 ,, 300 ,, ..	162			
Do.	7. ,, 5 ,, 5 ,, 3 ,, 200 ,, ..	177			
Do.	8. ,, 6 ,, 5 ,, 6 ,, 330 ,, ..	172	2,090		
4. Earthwork ..	9. Excavating the channel	3,590	3,590		
5. Miscellaneous ..	10. Fixing demarcation stones	134	134	7,270	7,270

BEZWADA,
28th August 1893.

(Signed) J. W. MARTIN,
Superintending Engineer, II Circle.

No. 144 I.

Note by the Chief Engineer for Irrigation.

Recommended for sanction with the remark that the estimate of Rs. 7,270 will probably be much reduced if earthenware pipe sluices with proper means of regulation were substituted for masonry sluices.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

23rd Sept. 1893.

ORDER—dated 4th October 1893, No. 852 I., Public Works.

The estimate, amounting to Rs. 7,270, for excavating the Kamalapuram North side channel of Bantumilli canal, Kistna Eastern delta, is sanctioned, Rs. 5,765 of the proposed outlay being met from the amount now available for unforeseen works and the balance, Rs. 1,505, from the anticipated saving in the provision for earthwork of the Eastern Bank canal.

2. The remarks of the Chief Engineer for Irrigation in the foregoing note should receive attention during the execution of the work.

3. This sanction is registered as No. 136 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with ten enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 4th.

Recd. *Encl.*

G.O., 4th Oct. 1893, No. 852 I.

OCTOBER.

Kamalapuram North Side Channel

Estimate of Rs. 7,270 for excavating the — of Bantumilli canal, Kistna Eastern delta, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From W. HUGHES, Esq., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 9th July 1893, No. 484 T.C.

I have the honour to submit, for sanction of Government, a supplemental estimate, amounting to Rs. 580, for improving the Kolakudi tank No. 141 in the list of Imperial Irrigation Works in the Trichinopoly district.

2. The original estimate, amounting to Rs. 2,880, for improving the tank was sanctioned in G.O., No. 657 I., dated 21st August 1891, and comprises the following items:—

	RS.
(1) To bring the crest of anicut to one uniform level of 50	20
(2) Raising and revetting channel bank	141
Do. do. tank bund	1,630
(3) Providing tower head to sluice	287
(4) Rebuilding wings, &c., of the tank weir	506
(5) Constructing an additional byewash 260 feet long	296
	2,880

Add amount of the supplemental estimate now submitted—

	RS.	
Constructing a head sluice as shown in plan No. 1, sheet No. 1.	876	
Deduct item No. 5 sanctioned in the original estimate ...	296	
		580
Total of the sanction required including the supplementary amount ...		3,460

3. In the original estimate provision was made for constructing a rough stone byewash 260 feet long at west end of the tank, fixing the M.W.L. of tank 48·50, and also for bringing the crest of anicut to 50·00, but on examination of soil the site proposed for byewash is not quite favorable, and further as the supply channel is very short and broad, the maximum water level in the tank would be nearly as high as at the dam and this is considerably above 48·5. It is therefore proposed to leave the anicut at its present level and to limit the quantity of water entering the tank by a head sluice. The sluice will have three vents each 4′ × 4′, as the river supply is almost entirely the surplus of a tank and freshes are therefore short and infrequent.

4. The rates are fair and the estimate is recommended for sanction.

ENCLOSURE.

REPORT to accompany the supplemental estimate for constructing a regulator to the Kolakudi tank, Musiri taluk.

	RS.
Estimate	3,400

Number in the Imperial list is 141.
Ayacut, 553 acres.
Revenue, Rs. 2,314.
Expenditure for the last 5 years—

	RS. A. P.
1886-87	..
1887-88	..
1888-89	..
1889-90	630 14 8
1890-91	..
Total ..	631 0 0

The original sanctioned estimate of Rs. 2,880 provided for the construction of a rough stone byewash at the right flank of tank, fixing the M.W.L. of tank at 48·50. It also provided for bringing the crest of anicut to 50·0. It is found, however, that by admitting the whole of the drainage into the tank, the M.W.L. will rise considerably above 48·50, as the flood level at the dam situated in the waterspread of the tank is considerably above this level.

Under instructions from the Superintending Engineer conveyed in his No. 258 T.C.,

dated 18th May 1893, a head sluice on a cheap design will be constructed immediately below the dam which will have the effect of rendering the tank safe from breaches, as, immediately it is filled, the whole of the water may be made to pass over the dam.

A substantial apron will be laid before vents on the tank side of sluice to prevent scour. On the left flank the head sluice wall will be let into the tank bund and on the right flank it will extend into natural rising ground, a bank 6 feet wide at top being formed to meet ground, its own level, about 250 feet upstream, and extended for a few feet *below*.

If the soil is found firm enough, the head sluice wall will be built in steps on right flank; the estimate, however, allows for one uniform depth. The M.W.L. of tank is shown as 48·50; this is the old level. As the tank weir is 115 feet long and its independent drainage only 3 square miles (the rest being under regulator), this level will be reduced, which is all the better for the tank. No revetment will be required below the sluice on right flank owing to the water level being very much below ground level. The rough stone byewash will not be built. The work will be carried out according to the standard specification for the different items.

6th June 1893.

(Signed) C. H. T. NORFOR,
Ex. Engr., Trichinopoly division.

To the Superintending Engineer, VI Circle, dated 25th July 1893, No. 22 T.C.
From the " " VI " dated 31st August 1893, No. 772 T.C.

No. 143 I.

Submitted to Government. The amount of the revised estimate has been reduced in this office from Rs. 3,460 to Rs. 3,400.

23rd Sept. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

ORDER—dated 4th October 1893, No. 853 I., Public Works.

The following revised estimate is sanctioned in supersession of the estimate of Rs. 2,880 sanctioned in G.O., No. 657 I., dated 21st August 1891:—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Trichinopoly Division.
Original Works.

	RS.
Improving Kolakudi tank, No. 141 of list of works appended to G.O., No. 407 I., dated 6th July 1887, estimate	3,400

2. This sanction is registered as No. 135 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle,
with 12 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 4th.

Recd. *Encl.*

G.O., 4th Oct. 1893, No. 853 I.

OCTOBER.

Kolakudi Tank

Revised estimate of Rs. 3,400 for improving — in Trichinopoly division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. P. Davidson, Esq., Officiating Superintending Fngineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 3rd August 1893, No. 253 E.I.

I have the honour to submit, for sanction of Government, the following estimates for original and repair works required to the Ariyur tank of the Ariyur tank group in Villupuram taluk, South Arcot division.

The object and necessity for the proposed works are explained in the report attached to the estimate.

(a) Constructing a drowned weir at the right flank of Ariyur tank, estimate Rs. 2,850—

1 Abstract estimate. | 1 Plan of weir.

(b) Raising and strengthening bund and repairing sluices of Ariyur tank, Rs. 4,600—

1. Report.
2. Group map (tracing).
3. Ayacut statement.
4. Hydraulic statement.
5. Abstract estimate.
6. Two level sections (tracing).

Enclosure.

Report to accompany the estimate for raising and strengthening the bund and repairing the sluices of, and constructing a rough stone byewash in, the Ariyur tank, Imperial list No. 160, Villupuram taluk.

Amount of estimate—

	RS.
Original	440
Repair	2,100
Total ...	2,540

2. *Position of the tank.*—The tank is the terminal one of a large group, which goes by its name, having a catchment basin of 38½ square miles and is also fed by the Pombay river. It lies on the north side of the above river and north-west to the Ariyur village within a mile distance.

3. *Condition of the bund.*—The condition of the bund is anything but satisfactory, having sustained several breaches in the year 1884, which were immediately closed, and two breaches at the right flank in October last, one of which has been closed and the other only ring bunded with a view to pass off the surplus of the tank in case of any abnormal floods again occurring, as there is no calingulah or weir for the purpose. It has got three sluices, of which No. 2 sluice was newly built and the other two, though in good order, require some improvements and sundry repairs.

4. *Proposals.*—It is proposed in this estimate to close the breach at the right flank, raise the bund throughout 3 feet above M.W.L. or 6 feet above F.T.L. with side slopes of 2 to 1 and top width 6 feet. Nos. 1 and 3 sluices will have their tunnels sufficiently extended and receive all needful repairs. The tank facing north and

This portion of tank bund is exposed to north-east monsoon wind; revetment is required.

11th February 1893. (Intld.) J. P. D.

north-east, front slope at the breach, will be revetted 1 foot above M.W.L. for a length of 679 feet, and the remaining portion planted with Velal grass and the rear slope turfed throughout as the soil is not good.

The ground at the right flank is almost at the F.T.L., but as the soil is loamy clay, the estimate provides for masonry weir for the length of 360 feet required for the surplus disposal, with masonry wings on both the sides as per plan accompanying.

5. As the condition of the tank is at present precarious, it requires early attention.

6. All works will be carried out according to the standard specification of this department.

VILLUPURAM,
14th October 1892.

(Signed) S. PANCHANADA IYER,
Overseer, P. W. Dept.

26th November 1892.

(„) V. KOTHUNDAPANY MUDALIAR,
Sub-Divisional Officer.

No. 142 I.

Submitted to Government. The amount of the estimate has been reduced in this office from Rs. 7,450 to Rs. 2,540. The decrease is due to the top width of the bund being reduced from 6 to 4½ feet and a pavement being substituted for the proposed surplus weir.

22nd Sept. 1893.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

ORDER—dated 4th October 1893, No. 854 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Ariyur tank No. 160 of list of works in the South Arcot Division appended to G.O., No. 407 I., dated 6th July 1889.

	RS.
Original Works—	
1. Constructing a pavement	440
Repairs—	
2. Raising and strengthening bund	2,100
Total estimate ...	2,540

2. This sanction is registered as No. 137 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle, with ten enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 4th.

Recd. *Encl.*

G.O., 4th Oct. 1893, No. 854 I.

OCTOBER.

Ariyur Tank

Estimate of Rs. 2,540 for improving — in South Arcot division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From Major A. W. SMART, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated 29th April 1893, No. 99 E.I.

I have the honour to submit, for early sanction of Government, as work is now in progress, of the revised plans and estimates, amounting in all to Rs. 96,580, for widening and improving the Cheyar main channel.

2. The original estimates (Rs. 80,550) were sanctioned in Government Orders noted in the margin out of a total of Rs. 1,03,770 then submitted for the part project.

No. 226 I. of 8th March 1892.
,, 88 I. of 30th January 1893.

3. The excess of Rs. 16,030 is chiefly due to hard gravel and rock being met with in the work of widening the channel, as also to the proposed enlargement of certain masonry works by raising the F.S.L of the channel from $6\frac{1}{2}$ feet to $9\frac{1}{2}$ feet or 3 feet above the present full supply level. Full details have been given in the accompanying supplemental report for the revision of these estimates and for other works which are still remaining to be done to the channel.

4. I also herewith submit for sanction, as directed in paragraph 4 of your notes embodied in G.O., No. 226 I., dated 8th March 1892, the estimates for the whole scheme so as to complete the improvements of the channel up to the Purisai and Setturai regulator as originally proposed. Any work required below this point should, I consider, be done from the ordinary maintenance grants. I hope therefore that you will see your way to increasing this grant by Rs. 10,000 for the next three years.

5. The total for the project as per classified abstract estimate amounts to Rs. 1,32,000 including the estimate of Rs. 4,500 for widening the aqueduct, which was sent with my letter No. 83, dated 10th April 1893.

6. With regard to the financial aspects of the project, please see paragraph 6 of the report.

P.S.—The above figures do not include Rs. 7,910–14–6 to be charged to famine —*vide* this office endorsement No. 72 E.I., dated 19th March 1893.

ENCLOSURES.

REPORT to accompany estimate for the improvement of the Cheyar anicut main channel.

	RS.
Amount of estimate	1,03,770

The Cheyar anicut is situated on the river of that name in the Wandiwash taluk in longitude 79° 26′ 30″ and latitude 12° 35′ 45″.

It was constructed in 1852 and subsequently improved and now consists of a bridge of 15 arches, 9 of which are of 25′ span and 6 of 15′ span, over an anicut wall between piers, in which there are 12 under-vents each of 5′ span. At the eastern end of the anicut is situated the head sluice to the main channel now to be improved. The anicut is built on brick in chunam wells, the superstructure being mainly of rubble stone in chunam plastered. It has two aprons in rear, one of cut stone 10′ wide and the second $1\frac{1}{4}''$ lower and 56′ broad, the inner 6′ being of cut stone uncovered and the outer 50′ being of loose rough stone. It has also a front apron to the under-vents about 20′ wide of rough stone in chunam. The anicut is 7·30′ in height, the crest level being 387·52 above M.S.L., and is built in two steps vertical in rear but with sloping face.

2. Both the anicut and head sluice are in excellent condition.

3. The head sluice consists of 7 vents each $7\frac{1}{2}'$ high and *about* 5′ broad. It is regulated by means of shutters worked by screw gearing.

The actual sum of the width = 33·5 feet only.

4. The reason of the submission of the present estimate is that it is found that the channel does not, on account of the very small fall $\left(\frac{1}{12320}\right)$ which has been given to the upper portion, carry even one-half the quantity which the head sluice is capable of passing and that complaints have been constantly made of want of water in the tanks nominally supplied by the system. It is therefore now proposed to improve the channel so as to do justice to the tanks under it and also with the object of eventually extending the irrigation, as the average supply is found to be ample to provide for such extension.

5. The following details will elucidate the above statements :—

(*a*) The present maximum discharge of the channel is (as calculated from sections 5, 6 and 7 of the 1st reach) as follows—taking the present sections :—

$A_1 = 333{\cdot}09,\ A_2 = 364{\cdot}27,\ A_3 = 335{\cdot}40.$

Mean area = 344·28.

$B_1 = 60{\cdot}75,\ B_2 = 73{\cdot}5,\ B_3 = 61{\cdot}00.$

Mean border = 65·08.

$$\left.\begin{array}{l}\text{H.M.D.} = 5{\cdot}29 \text{ feet}\\ \text{C.} = 81{\cdot}30 \text{ (Bazin)}\end{array}\right\}\ \text{Fall}\ \left\{\begin{array}{l} = \frac{\cdot 75}{9240}\\ = \frac{1.}{12320}\end{array}\right.$$

Velocity in feet per second = 1·684.

Discharge in cubic feet per second = 580 cubic feet.

(*b*) As a check on the above, the following calculation is appended. From the register the head at F.S.L. with vents fully open is found to be 0·1 foot and since l = 33·5, d = depth in rear = 7·2 and h = ·1 and c (S.O. No. 50) = ·75.

$$D = c\,l\sqrt{2gh}\left\{d + \frac{2h}{3}\right\}$$

$$= \tfrac{3}{4} \times 33{\cdot}5 \times 8\sqrt{\cdot 1}\,(7{\cdot}2 + \cdot 0666)$$

$$= 201 \times \cdot 3162 \times 7{\cdot}2666 = \textit{460 cubic feet.}$$

It will be best, however, to take the higher figure to be on the safe side.

6. The head sluice is, however, capable of supplying with a head of ·8′ a maximum supply of 1,264 cubic feet as follows :—

$$C = \tfrac{3}{4},\ l = 33{\cdot}5,\ d = 6{\cdot}5,\ h = \cdot 8.$$

$$D = \tfrac{3}{4} \times 33{\cdot}5 \times 8\sqrt{\cdot 8}\left\{6{\cdot}5 + \frac{1{\cdot}6}{3}\right\}$$

$$= 201 \times \cdot 8944 \times 7{\cdot}033 = 1{,}264 \text{ cubic feet per second.}$$

7. The total ayacut under the channel (as shown in statement D[1] accompanying) is 18,020 acres. The sum of the areas of the free basins of the component tanks is also there shown to be 104·5 square miles. Allowing 40 acres to be capable of irrigation by the drainage of 1 square mile, this area of 104·5 square miles will supply enough water for 104·5 × 40 = 4,180 acres, leaving a balance to be supplied with river water of (18,020 − 4,180) or *13,840 acres.*

	ACRES.
8. The total average cultivation in the district is (by the Imperial list) =	13,706
Add for Chingleput district, 3 tanks ... ... =	477
Add for land directly irrigated ... ... =	300
Total ...	14,483
Deduct area supplied by local drainage ... ... =	4,180
Total area now nominally supplied by river water ... ... =	10,303
But total area to be supplied ... ... =	13,840
Difference ...	3,537

∴ Besides doing justice to the 10,300 acres now nominally supplied, it is hoped that *3,537 acres* more than at present may be brought under cultivation.

9. The discharge of head sluice is, as shown above, to be 1,264 cubic feet. The total area to be irrigated by river water is *13,840 acres*, so that the average supply per acre will be $\frac{1264}{13840} = \cdot 09133$ cubic feet per second.

A portion of the area (that under the Ayalavady channel 3,630 acres) is partly supplied from the "Kiliaru river," so that it is proposed to give the rest of the system 0·1 of a cubic foot per second during period of full supply and the remainder (= 0·062 of a cubic foot per second) to the Ayalavady channel during the same period.

10. The area thus to be supplied at 0·1 cubic foot per second is *10,430 acres* and as the average period of full supply is found (see statement B[1]) to be 16·9 days, the quantity supplied during this period will be *1,522,904,000* cubic feet sufficient (at 189,000 cubic feet per acre) for 8,052 acres. Similarly, the area to be supplied at 0·062 per cubic foot per second is 3,630 acres. This will receive in 16·9 days 328,758,888 cubic feet enough for 1,740 acres. Thus in the 16·9 days 9,790 acres (or nearly the whole area now under cultivation) will be supplied fully independent of what may be supplied by the Kiliaru to tanks bordering on that stream.

11. In addition to the above, however, the register shows that there may be expected on the average during the 7 months from June to December inclusive a total of 5,013,643,120 cubic feet, or enough for 26,527 acres, at 189,000 cubic feet per acre or sufficient for double crops on the whole ayacut.

12. The total average period the channel is expected to be carrying the above supply is 137·7 days, there being on the average 76·3 days (out of the above 7 months) during which no supply passes. But during the whole year (see statement B-II) the channel runs on the average for 198·5 days, there being 166·7 dry days in the whole year. The foregoing statement clearly shows that the channel can be made capable of irrigating the whole ayacut and that there will therefore result (when the whole project is completed) an extension of cultivation to the amount of about *3,500 acres* in addition to giving full supply to the area now only nominally supplied but charged with water rate.

13. It is now necessary to explain in detail the improvements proposed. These consist in—

(*a*) Increasing the bed fall throughout and widening the channel to enable it to carry the required supply (for details see statement A[1]). The side slopes are taken (for hydraulic calculations only) at ½ to 1 throughout and (the soil being generally very hard) actually have that slope generally in the lower part of bed.

(*b*) The falls given vary from $\frac{1}{1000}$ to $\frac{1}{3500}$, but have been made as uniform as possible in each reach.

(*c*) The bed widths vary from 53′ at head to 22′ near the end, and then increases to 48′ as less depth has to be allowed to avoid flooding the country and to obtain the necessary head above the regulator.

(*d*) The full supply depth is 6′ 6″ in the whole of the 1st reach.

In the 2nd reach it commences with 6′ 0″ and ends with 5′ 6″

In the 3rd reach it is made 3′ 6″

(*e*) Bazin's co-efficients have been used in working out the velocities.

(*f*) The mean velocity at F.S.L. varies from 3·00′ to 5·60′ per second but is everywhere suitable to the soil.

14. The work proposed consists—

(*a*) in widening and deepening the channel as detailed in paragraph 13;

(*b*) in widening the existing bridges, aqueduct, &c., crossing the channel to pass the increased discharge;

(*c*) in providing new regulators fitted with screw gearing shutters in order to control the supply;

(*d*) in providing for the proper discharge of surplus drainage from the tanks through which the supply passes;

(*e*) in providing for new sluices or altering existing sluices wherever necessary to ensure the proper supply being taken off;

(*f*) in providing huts for the shelter of the establishment that must be entertained to work the regulators;

(*g*) in providing mile stones and furlong stones for the channel down to the Purisai regulator;

(*h*) in providing for the compensation to be paid for land taken up.

(*i*) in providing a sand sluice and cutting a new channel therefrom to river.

15. The information given on the plans accompanying clearly show the necessity for the alterations proposed in each case. As regards the bridges, it has been thought advisable to demolish and reconstruct the whole of them (except one which requires no alteration) as it would have been difficult to join the new work on to the old properly and would have cost nearly as much.

A statement accompanies estimate showing the alteration to be made in existing vents of sluices for which a lump sum has been allowed.

The estimate does not provide for any work below the Purisai-Setturai regulator.

This portion of the project is now under investigation.

RANIPET,
16th September 1891.

(Signed) R. W. WARD, Sub-Condr.,
Sub-Engineer.

(„) C. C. RAWSON, Major, R.E.,
Ex. Engr., North Arcot Division.

5th October 1891.

SUPPLEMENTAL to report on Cheyar main channel.

In his note (paragraph 4, G.O., No. 226 I., dated 8th March 1892), the Chief Engineer for Irrigation directed that the whole project of the Cheyar channel works should be submitted complete. This is now done with the exception that the branch channels, Ayalavadi, Setturai and Purisai, are not now dealt with, and I am of opinion, as there is no difficulty found in sending down water by the existing channels and water-courses, that they should not be taken up unless the necessity is proved hereafter. The only exception to this is the Setturai channel, the banks of which require raising in parts, but this work would be much better dealt with under ordinary maintenance, and I have ordered a separate estimate to be submitted. I would suggest that the maintenance under the Cheyar system be raised by Rs. 10,000 a year to allow of tanks being repaired and a few minor obstructions removed in the channels.

2. The plans and estimates now submitted deal with the main channel as far as the Purisai-Setturai regulator and with, exception of two cases, are the same with certain modifications as those dealt with by the Superintending Engineer in his letter printed with the Government Order in question. These two exceptions relate to the proposed raising of the F.S.L. of the main channel up to the Mukkur tank. This in my opinion is a very important part of the scheme and unless carried out the supply that Mr. Ward calculated that the channel would carry will not be obtained For instance, with the present F.S.L. of 6½′ on rear floor of head sluice the water at the aqueduct only rises to 1′ 4″ within top of side walls of aqueduct in the 4th mile, which may be taken as equivalent to 988 cubic feet per 1″ instead of 1,268 cubic feet calculated by Mr. Ward. The difference is due to the large accumulations of silt in the 1st mile of channel and probably also to the gradual reduction of bed fall which is inevitable when a channel discharges into a large tank, the F.S.L. of which reaches some distance up the channel. The proposal now is to raise the F.S.L on the rear gauge of the head sluice from 6½ to 9½ feet. To effect this it is necessary to fit the anicut crest with falling shutters and to provide inlets and banks (in parts) along the right margin of the channel which has hitherto been left unembanked. Allowing for 1½ feet silt during high freshes, it is calculated that the channel will discharge 1,708 cubic feet per 1″; the discharge of the head sluices will be with the available head of ·80, 1,707 cubic feet per 1″ with a co-efficient of ·90. It may be hereafter necessary to enlarge the head sluices to some extent, but this may be left for the present as experience will be a better guide than any calculation that can be now made. Beyond the Mukkur tank nothing is required to be done in connection with this raising of the F.S.L. above as the Vakkadai regulator and the tank weirs are quite sufficient to deal with the extra supply that will be brought down by the channel. If the channel were kept free of silt and if there were no reduction of fall the discharge would be 2,353 cubic feet per 1″, but this is a quantity that it will be impossible ever to reach except in high floods. At such a time an increase of the F.S.L at the head sluice beyond that now proposed is not advisable as it would only tend to increase the quantities if silt carried into and down the channel.

3. The modifications of the plans and estimates previously submitted are as follow :—

(1) *Second reach—Earthwork, &c.*—Excess of Rs. 5,800 due to hard gravel and rock being met with and not provided for in original estimate.

(2) *Third reach.*—Excess of Rs. 6,350 to the same causes, see the comparative statements for details.

(3) Enlargement of the aqueduct in the 4th mile and provision of deeper foundations necessitated by the scour below. A width of 64 feet has been allowed between parapets though the bottom width of the channel above is only 53 feet. This is thought advisable in order to allow of 1 foot less depth of water over floor of aqueduct than would otherwise be necessary.

(4) Raising of piers of new bridges to allow for the raising of F.S.L.

(5) Altering sluices Rs 610 omitted as work may be done gradually from maintenance as found to be required.

(6) Purisai-Setturai regulator's vents enlarged in height by 6″ to allow of raising of F.S.L.

4. With regard to the water returns I have added a statement showing the number of continuous days on which from the years 1875 to 1892 inclusive water was either surplussing over or through the under-sluices of the anicut. Another statement of rainfall over the irrigated area is also added. Hitherto it has been taken that 40 acres per square mile are irrigated from the local rainfall stored in tanks. This is certainly considerably below the mark in the North Arcot district, but what is the actual area to the square mile that can be so irrigated cannot be at present calculated with certainty as the data are insufficient to enable us to do so. We should require for a series of years, besides the rainfall registers which we have, the actual discharges of the main channel obtained not by calculations by formula but from observations of velocity, &c. This we have not got, but arrangements are being made to supply the deficiency in the future.

5. The question of storage is one of very great importance, and I have no doubt that what we have to aim at is the gradual elimination of small tanks, which are silting up, and the substitution of large tanks in their place. A survey establishment has been sanctioned partly for such investigation, and within the next year we should have contoured surveys of the Purasai-Echur tanks, Vadanankur-Tanankur, the Salikai and Kuram tanks.

With these it may be possible to determine what should be done in the way of enlargement of existing tanks.

6. As to the financial aspects of the proposed increase of supply, I am of opinion that no reliable forecast can be now made. That there will be increase of the irrigated area I have no doubt, but it would be impossible now to ascertain under what tanks such increase is likely to take place. By a regular system of distribution and by records of tank-gauge readings (for which arrangements are being made) much may be done in getting the lower series of tanks filled and in preventing waste, but the data at present available are insufficient to allow us to show how and in what manner the extra river supply is likely to be most usefully employed. Mr. Ward in his report (see paragraph 7) calculates that there will be sufficient to supply 3,537 acres over and above the present irrigated area of 14,483 acres. It is quite possible that this may be so; but Mr. Ward's calculations based on the water returns are in my opinion quite unreliable. As I have noticed already, he did not take into account the silted state of the channel at the head, which very considerably diminishes its carrying capacity. Unless, therefore, the F.S.L. is raised as now proposed, there is no possibility of getting from the river the quantities of water calculated on by Mr. Ward (see my remarks in red ink on statement C-1).

Besides this it has to be remembered that a widened channel on account of greater absorption and increased silt deposits will, with the same quantity of water at the anicut (that is when there is no surplus passing the anicut), discharge less than it did before it was widened. Statement F gives the number of consecutive days in each year from 1874—1892 that there was surplus at the anicut. It is only during such days that the discharge of the channel could have been increased.

6th April 1893.

(Signed) A. W. SMART, Major, R.E.,
Ex. Engr., North Arcot Division.

From the Superintending Engineer, IV Circle, No. 106, dated 3rd May 1893.
To the " " " " 65 N.A., dated 8th July 1893.
From the " " " " 176 E.I. " 12th July "
To the " " " " 71 N.A. " 12th Aug. "
From the " " " " 243 E.I. " 16th Sept. "

No. 146 I.

Submitted to Government with a recommendation that the revised estimate, as altered in this office to Rs. 1,27,060 for improving the Cheyar main channel, be sanctioned under "Capital," the outlay already incurred on the original sanction under "Revenue extensions and improvements" being written back to that head.

25th Sept. 1893.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col. R.E.,
Chief Engineer for Irrigation.

Order—dated 6th October 1893, No. 855 I., Public Works.

No. 226 I., dated 8th March 1892.
No. 88 I. " 30th January 1893.
No. 617 I. " 12th July 1893.

The following revised estimate is sanctioned in supersession of the estimates aggregating Rs. 83,100 sanctioned in the orders marginally noted :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Cheyar Anicut System.
Open Capital Account.
I. Works.

			RS.	RS.
1. Head Works—				
3. Works	...	1. Raising Anicut crest by 2 feet ...	1,000	
		2. Constructing sand sluice below head.	3,900	
			——	4,900
2. Main Canals and Branches—				
2. Land	...	3. Compensation for land	1,660	
			——	1,660

		RS.	RS.
3. Regulators.	4. Regulator No. 1	3,970	
	5. Do. " 2	2,760	
	6. Do. " 3	1,710	
	7. Do. " 4	1,020	
	8. Do. " 5	2,510	
	9. Do. " 6	1,810	
	10. Head sluice to Palanchur tank ...	160	
			13,940
6. Other Cross Drainage works.	11. Widening existing aqueduct ...	4,400	
	12. Inlet No. 1	440	
	13. Do. " 2	330	
	14. Do. " 3	920	
	15. Do. " 4	360	
	16. Do. " 5	280	
	17. Do. " 6	280	
			7,010
7. Bridge ...	18. Bridge No. 1	2,050	
	19. Do. " 2	2,000	
	20. Do. " 3	2,200	
	21. Do. " 4	2,220	
	22. Do. " 5	3,070	
			11,540
12. Earthwork.	23. Cutting a new channel from proposed sand sluice to river ...	7,010	
	24. Widening and deepening main channel from head up to Mukkur tank.	45,400	
	25. Widening and deepening main channel from regulator No. 1 to 2 ...	16,800	
	26. Widening and deepening main channel from regulator No. 2 to 6 ...	10,200	
	27. Raising banks of main channel to permit F.S.L. being raised ...	3,200	
			82,610
14. Tanks and Reservoirs.	28. Widening sluice to Nayal tank ...	260	
	29. Altering head of Mulagiriput sluice.	80	
	30 Constructing a weir to Chengadu-Nackaneri tank	1,330	
	31. Constructing a weir to Nallalam tank	700	
	32. Do. do. to Kovelur tank.	1,030	
			3,400
15. Miscellaneous.	33. Lascars' huts at Vaccadai ...	710	
	34. Do. at Purisai and Setturai division sluice	1,020	
	35. Fixing mile and furlong stones ...	270	
			2,000
	Total, I Works ...		1,27,060
II. Establishment			28,842
III. Tools and Plant			98
	Total Estimate ...		1,56,000

2. This sanction is registered as No. 139 I. of 1893-94, and will remain current till the end of 1895-96.

3. The outlay already incurred on "Revenue Account" will be written back to "Capital."

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle, with 59 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras

PUBLIC WORKS.

Dated October, 6th.

Recd. *Encl.*

G.O., 6th Oct. 1893, No. 855 I.

OCTOBER.

Cheyar Main Channel

Revised estimate of Rs. 1,56,000 for improving the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer, Public Works Department (through the Chief Engineer for Irrigation), dated Dowlaishweram, 28th August 1893, No. 1382 G.D.

I have the honour to submit, herewith, an estimate of Rs. 72 for a watcher employed on watching boats at dry dock on Dowlaishweram main canal, and to request that you will be good enough to obtain the sanction of Government to the same under G.O., No. 1328 W., of the 17th May 1893.

2. The watcher has been employed for many years past and his pay has hitherto been charged to a special estimate.

3. The watcher has always been paid Rs. 6 which the Executive Engineer, Eastern Division, says is not more than that paid to Dowlaishweram Workshop guard lascars.

4. The estimate now submitted is for the year 1893–94.

ORDER—dated 6th October 1893, No. 856 I., Public Works.

The following estimate is sanctioned:—

Irrigation.
42. Major Works (Working Expenses).
Gódávari Delta System.
Eastern Section.
III. Tools and Plant.
5. Repairs and Carriage.

	RS.
Watchman for watching boats at dry dock on Dowlaishweram main canal, estimate	72

2. This sanction is registered as No. 138 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with one estimate.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 6th.

Recd. *Encl.*

G.O., 6th Oct. 1893, No. 856 I.

OCTOBER.

Watchman

Estimate of Rs. 72 for a — for watching boats at dry dock on Dowlaishweram main canal, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From the Superintending Engineer, II Circle, dated	30th	July	1893,	No.	1111 K.S.
Office-note to the Examiner, Public Works Accounts, dated	5th	August	1893,	No.	196.
From the Superintending Engineer, II Circle, dated	23rd	August	1893,	No.	1270 K.S.
Office-note to the Examiner, Public Works Accounts, dated	1st	September	1893,	No.	277.
" from " " "	13th	"	"	"	948.
" from " " "	13th	"	"	"	950.
From the Superintending Engineer, II Circle "	16th	"	"		
Office-note to the Examiner, Public Works Accounts "	19th	"	"	"	240.

No. 145 I.

Note by the Chief Engineer for Irrigation.

In letter No. 10 I., dated 22nd January 1889, printed in Proceedings of the Madras Government, No. 62 I., dated 11th February 1889, the Government of India extended for a further period of 5 years, commencing from the 1st April 1888, the Secretary of State's sanction to the estimates for the completion of the Kistna delta system as shown below :—

	RS.
Direct charges	1,39,19,784
Indirect do.	9,81,160
Total ...	1,49,00,944

This extension of sanction expired on the 31st March 1893.

2. In G.O., No. 869 I., dated 26th October 1892, statements of outlay already, and to be, incurred were called for to admit of an application being submitted for a further extension of sanction. With his letter, No. 1111 K.S., dated 30th July 1893, the Superintending Engineer, II Circle, submitted the statements required, viz. :—

No. I statement showing by sub-heads the sanctioned estimates, the expenditure incurred up to end of 1892–93 and the balances of the estimates.

No. II statement showing the items on which expenditure will have to be incurred after 31st March 1893 in completing the delta works. The principal items of this statement have been indicated by an asterisk.

The figures of outlay shown in both statements have been verified and corrected where necessary by the Examiner of Public Works Accounts. The amounts of the estimates entered in statement No. II as submitted by the Superintending Engineer included the sanctions accorded by Government up to end of June 1893, but the statement has been revised in this office so as to include all sanctions up to date. It is recommended that the two abstracts by main and sub heads appended to this note and statement No. II, of which the Superintending Engineer wishes to be furnished with 30 copies, be printed. The great delay in the submission of the statements is attributed by the Superintending Engineer to their bulk and the time required in fair copying and comparing them.

3. The total direct charges to the end of 1892–93 were Rs. 1,00,44,233, leaving Rs. 38,75,551 as the unexpended balance of the sanctioned estimate on 1st April 1893 still to be worked out. Rs. 56,73,820 of the expenditure were spent prior to 1882–83, Rs. 21,40,202 during the period 1882–83 to 1887–88 and the balance Rs. 22,30,211 during 1888–89 to 1892–93. The following are the principal works executed during the last quinquennium :—

Eastern Section—Head Works.—The anicut crest was raised by 1 foot of concrete with cast iron grooved posts between which planks can be slipped when required to retain water to the required height after the season for floods. Screw gearing shutters to the Sitanagaram under sluices were provided. Quarters for the Executive and Assistant Engineers at Bezwada were constructed. An office for the Executive Engineer and anicut lascars and lock establishment sheds were also built.

Ryves canal.—One bridge, 6 head sluices, 7 minor sluices, 1 culvert, 2 regulators, 5 distributaries and 2 minor branches were completed.

Ellore canal.—Three outlets, 1 aqueduct, 1 bridge and 5 large distributaries were completed. The canal banks were raised.

Masulipatam canal.—The canal was widened by 13 feet from head to 4 miles 5 furlongs ; 2 head sluices and 54 masonry slope drains were constructed.

Bantumilli canal.—Kamalapuram lock, the main distributary, south side channel and one minor channel were completed. The tail lock and lock weir were almost completed. Five head sluices, 2 bridges and 12 minor sluices were also completed. Widening and extension of canal was practically finished.

Bank canal.—The lock and sluice at head of canal were completed. The canal for 13 miles was excavated to full bottom width.

Pulleru canal.—The straight cut, 3 bridges, 4 head sluices, 9 sluices and 3 distributaries were completed.

Pamarru junction canal.—One bridge was constructed.

Polroz canal.—One lock, improvements to 1 head sluice, construction of 5 head sluices, 2 outlets and inlets, 12 minor masonry works, 9 bridges and 7 distributary channels were completed. The canal was widened in the first $7\frac{1}{2}$ miles.

Drains.—The Inampudi, Polraz, Chendrayacodu, Peddakommileru, Pallava and Kanakavalli drains and the Lingala and Vadlamanad affluents were completed. The Lazzabanda drain and Chinnakommileru affluent were widened and the Peddalanka drain was excavated to tentative width.

Western Section—Head Works.—Quarters for the Executive and Assistant Engineers at Duggirala were constructed.

Main canal.—The widening of this canal from 1 to 6 and 9 to 12 miles was in progress.

Bank canal.—One lock weir, 1 rest-house and 2 head sluices were constructed. One channel was extended, the canal was widened and the diversion of the canal at Penumudi was completed.

Commamur canal.—The improvements to canal in 1st to 4th reaches, 1 inlet, 1 surplus sluice, 1 bridge, 12 distributaries, 3 minor masonry works and drainage affluents were completed.

Nizampatam canal.—One bridge and lock establishment quarters at Duggirala were constructed.

Drains.—Iskapalli aqueduct of Bhattiprole drain, Langagunta affluent and 1 bridge were completed. The Tungabhadra drain was widened, and Nallamada and Sakkikalva affluents and the Karenchedu drain were completed. The earthwork improvements to the Romperu drain were almost completed to its junction with Sakkikalva affluent (5 miles 37 chains).

4. After providing for all known requirements, except for the works required for carrying out the extension of irrigation recently approved (*vide* paragraph 6), the amount available for unforeseen works is, as shown in the distribution given in the margin of the total amount sanctioned for works outlay, Rs. 3,75,257, which represents the unappropriated balance of the sanctioned provision for the extension of the Eastern Bank canal and the Puligedda aqueduct which are not now required, it having been recently decided that it was unnecessary that any further expenditure should be incurred upon the extension of the Bank canal and the proposed irrigation of 15,000 acres thereby, whilst there is ample area available for irrigation under the Ellore, Ryves and Masulipatam canals.

	RS.
Old outlay	30,81,755
Outlay incurred on completed works	31,74,637
Outlay incurred on works in progress	14,35,792
Outlay to be incurred to complete works (statement No. II.)	26,63,553
Reserve for unforeseen works ...	3,75,257
Total amount sanctioned for *works*.	1,07,30,994

5. The irrigation under the delta is advancing very rapidly. There was an extension of irrigation from 337,327 acres in 1886–87 to 471,114 acres in 1892–93 and an increase of revenue from Rs. 11,74,682 to Rs. 18,00,680. The financial result during 1892–93 was a net return, after paying interest charges, of 8·87 per cent. on the total capital invested against 7 per cent., the ultimate financial result anticipated.

6 The ultimate area of irrigation as originally contemplated in the project estimates was 475,000 acres, but recent inquiry has shown that it would be unwise to restrict cultivation to that extent. Under the Ellore canal a head sluice and channel for the irrigation of 12,000 acres have already been carried out some years back, but kept closed owing to the restriction placed hitherto upon the extension of irrigation. The Superintending Engineer was therefore instructed * to have this sluice opened during the irrigation season and the effects upon the flow and water levels of the Ellore canal carefully gauged and recorded. He was also requested to forward the necessary estimates of the probable cost of putting the Masulipatam and Ryves canal into a condition fit to cope with the increased supply they may be called upon to carry. An estimate, amounting to Rs. 34,200, for widening the former canal was

* Memo. No. II/27 K S., dated 17th Feb 1893.

sanctioned in G.O., No. 356 I., dated 22nd April 1893, but the estimate for the latter canal has not yet been submitted. With these canals rendered efficient there is every probability of an extension in both sections of irrigation to the extent of 100,000 acres beyond what was fixed as the ultimate area.

7. As no excess over the sanctioned estimate for the delta is anticipated, merely an extension of the period of sanction for another 5 years is now necessary.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

28th Sept. 1893.

ENCLOSURES.

STATEMENT showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle.

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure.			Increase.	Decrease.	Remarks.
						Expenditure incurred to end of 1892–93.	Further expenditure.	Total.			
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION.	RS.	RS.	RS.	RS.	RS.	RS.	
				Head Works.							
1	No. 580 I. of 30th June 1893 ..	(1) C.	..	Curtain wall in rear of Seethanagaram head sluices ..	3,300	..	3,300	3,300	..	..	
2	Do. do. ..	..	..	Driving piles in front of Seethanagaram head sluices ..	3,200	..	3,200	3,200	..	..	
				Total ..	6,500	..	6,500	6,500	..	..	
3	....	(1) O.	..	Wire fencing to Public Works Department lands in Buckinghampett	..	..	1,025	1,025	1,025	..	
				Total (1) Head works ..	6,500	..	7,525	7,525	1,025	..	
				Masulipatam canal.							
4	No. 666 I. of 6th Augt. 1892 ..	(2) K.	..	Quarters for lock establishment at Nidamole	1,530	1,104	426	1,530	..	..	
5	* No. 575 I. of 1st July 1880 and No. 562 I. of 7th Oct. 1890 ..	(2) L.	1 12	Improving and widening canal	1,05,200	80,838	24,362	1,05,200	..	..	
6	* No. 356 I. of 22nd April 1893 ..	..	..	Do. do.	34,200	..	34,200	34,200	..	..	
7	No. 575 I. of 1st July 1885 ..	..	..	Stubbing trees	5,000	..	5,000	5,000	..	..	
				Total ..	1,44,400	80,838	63,562	1,44,400	..	..	
				Total (2) Main canals and branches ..	1,45,930	81,942	63,988	1,45,930	..	..	
8	No. 856 I. of 17th Oct. 1892 ..	(3) B.	..	Compensation for land required for west side channel ..	3,000	..	3,000	3,000	..	..	Lump sum.
9	Do. do. ..	..	22 0	Do. do. for Medur channel ..	2,800	..	2,800	2,800	..	..	
10	Do. do. ..	..	..	Do. for Kistnapuram branch of Medur channel.	1,270	..	1,270	1,270	..	..	
11	Do. do. ..	..	..	Do. do. Gudapad of Medur channel.	800	..	800	800	..	..	
				Total ..	7,870	..	7,870	7,870	..	..	
12	No. 856 I. of 17th Oct. 1892 ..	(3) C.	..	Masonry works on west side channel	7,500	..	7,500	7,500	..	..	Lump sum.
13	Do. do. and No. 427 I. of 13th May 1893.	..	22 0	Medur channel head sluice	1,000	273	727	1,000	..	..	
14	Do. do. ..	..	..	Do. 5 field masonry sluices	500	..	500	500	..	..	
15	No. 573 I. of 29th June 1893 ..	..	..	Do. drop No. 1	435	..	435	435	..	..	
16	Do. do. ..	..	..	Do. drop No. 2 over bridge at 5 miles 1⅓ furlongs ..	710	..	710	710	..	..	
17	No. 856 I. of 17th Oct. 1892 ..	..	..	Do. drop No. 3 over bridge at 7 miles 6 furlongs ..	575	..	575	575	..	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Masulipatam canal—cont.							
18	No. 856 I. of 17th Oct. 1892 ..	(3) C.	..	Medur tail escape	150	..	150	150	..	..	
19	No. 573 I. of 29th June 1893 ..	..	..	Head sluice to Kistnapatam branch	350	..	350	350	..	..	
20	No. 856 I. of 17th Oct. 1892 ..	..	..	Field masonry sluice	550	..	100	100	..	..	
21	No. 573 I. of 29th June 1893 ..	..	..	Road culvert at 2 miles 5 furlongs across Nidamole road..	100	..	550	550	..	..	
22	No. 856 I. of 17th Oct. 1892 ..	..	..	Tail escape	390	..	100	100	..	..	
23	No. 573 I. of 29th June 1893 ..	..	..	Head sluice to Gudapad branch	100	..	390	390	..	..	
24	No. 856 I. of 17th Oct. 1892 ..	..	..	Tail escape to do.	4,300	..	100	100	..	..	
25	No. 765 I. of 2nd Sept. 1893 ..	..	22 0	Surplus weir		..	4,300	4,300	..	..	
				Total ..	16,760	273	16,487	16,760	..	..	
26	* No. 856 I. of 17th Oct. 1892 ..	(3) L.	..	Distributaries of west side channel	18,000	..	18,000	18,000	..	..	Lump sum.
27	Do. do. ..	..	22 0	Medur channel	5,850	..	5,850	5,850	..	..	
28	Do. do. ..	..	..	Kistnapuram branch of Medur channel	3,180	..	3,180	3,180	..	..	
29	Do. do. ..	..	..	Gudapad branch of Medur channel	1,760	..	1,760	1,760	..	..	
				Total ..	28,790	..	28,790	28,790	..	..	
30	Appendix D printed in G.O., No. 181 I. of 28th Feb. 1882.	(3) O.	..	Cattle-crossing west side channel	1,500	..	1,500	1,500	..	..	Lump sum.
				Total (3) Distributaries ..	54,920	273	54,647	54,920	..	..	
				Total, Masulipatam canal ..	2,00,850	82,215	1,18,635	2,00,850	..	..	
				Pulleru canal.							
31	....	(2) B.	..	Compensation for land	..	145	..	145	145	..	
32	No. 318 I. of 11th April 1893 ..	..	..	Do. required for depositing silt	3,650	..	3,650	3,650	..	..	
				Total ..	3,650	145	3,650	3,795	145	..	
33	*	(2) L.	..	Widening from Pamarru to Cowtaram	..	..	22,000	22,000	22,000	..	
34	No. $\frac{455}{A.}$ I. of 3rd May 1884 ..	(2) O.	..	Other cattle-crossings	2,745	..	2,745	2,745	..	..	Lump sum.
35	Superintending Engineer's No. 2185 K.S. of 8th Dec. 1891.	..	..	Mile and furlong stones along the Pulleru canal ..	160	80	80	160	..	..	

36	No. 563 I. of 16th July 1891 ..	..	..	Demarcation stones along Upper Pulleru	200	80	120	200	..	..	
				Total ..	3,105	160	2,945	3,105	..	..	
				Total (2) Main canals and branches ..	6,755	305	28,595	28,900	22,145	..	
37	Para. 80 of the note printed in No. 3528 of 26th Dec. 1876.	(3) B.	..	Kalidindicodu	460	..	460	460	..	..	Lump sum.
38	Do. do. ..	..	..	Pedatummidi channel	1,100	..	1,100	1,100	..	..	Do.
39	No. 632 I. of 8th July 1884 ..	..	..	Bantumilli south side channel	2,080	1,069	1,011	2,080	..	..	
40	Superintending Engineer's No. 2624 K.S. of 16th Mar. 1889.	..	..	Proposed head of Sayarazu Lunkacode	277	..	277	277	..	..	
41	Superintending Engineer's No. 860 K.S. of 2nd July 1890.	..	..	Yedlacodu extension	215	21	194	215	..	..	
42	Superintending Engineer's No. 2989 K.S. of 9th Mar. 1892.	..	..	Right side channel of Motur channel from 2 miles 63 chains	340	60	280	340	..	..	
43	Superintending Engineer's No. 1045 K.S. of 5th Aug. 1892.	..	..	Right side channel of Motur channel from No. 5 or Singanapudi head sluice	107	..	107	107	..	..	
44	No. 691 I. of 30th July 1884 ..	..	..	Channels in the 5th sub-section for which estimates have not yet been prepared	8,015	..	8,015	8,015	..	..	Lump sum
45	No. 291 I. of 25th Mar. 1891 ..	..	..	Left side channel of Kalidindicodu	1,400	441	959	1,400	..	..	
46	No. 845 I. of 14th Oct. 1892 ..	..	..	Right side channel of Gudiváda channel	103	..	103	103	..	..	
47	No. 824 I. of 22nd Sept. 1893 ..	..	..	Excavating Vennelacodu	240	..	240	240	..	..	
48	No. 3170 K.S. of 22nd Mar. 1893.	..	..	Head to Kanur Subbiacode and Chevandra channel ..	32	..	32	32	..	..	
49	No. 587 I. of 4th July 1893 ..	..	..	Chintalacodu extension	537	..	537	537	..	..	
50	No. 601 I. of 8th July 1893 ..	..	..	Left side channel of Gudiváda channel	241	..	241	241	..	..	
				Total ..	15,147	1,591	13,556	15,147	..	..	
51	No. 845 I. of 14th Oct. 1892 ..	(3) C.	..	Sluice to right side channel of Gudiváda channel ..	436	332	104	436	..	..	
52	No. $\frac{455}{A}$ I. of 3rd May 1884 ..	..	..	Pamarru channel, Pengandra branch, one head sluice and one drop	600	..	600	600	..	..	Lump sum.
53	Do. do. ..	..	..	Do. Komaravole branch head sluice ..	223	..	223	223	..	..	
54	Do. do. ..	..	..	Do. culvert under road	150	..	150	150	..	..	Lump sum.
55	No. 573 I. of 29th June 1892 ..	..	..	Regulator in Palacodu for Pengandra branch No. 1 ..	210	..	210	210	..	..	
56	Superintending Engineer's No. 3282 K.S. of 31st March 1892.	..	..	Head sluice to old Palacodu in left bank, Motur channel ..	546	..	546	546	..	..	
57	Para. 80 of the note printed with G.O., No. 3528 of 22nd Dec. 1876.	..	..	Fifteen minor sluices	5,250	..	5,250	5,250	..	..	Lump sum.
58	Superintending Engineer's No. 1951 K.S. of 7th Nov. 1892.	..	..	Combined head sluice to Chenandra channel and Kanur Subbiacodu	600	82	518	600	..	..	
59	Superintending Engineer's No. 2502 K.S. of 19th Jan. 1893.	..	..	Bridge at 3rd mile of Doggumilli crossing	900	90	810	900	..	..	
60	Superintending Engineer's No. 1968 K.S. of 8th Nov. 1892.	..	..	Head sluice to Golinepalli channel on the right bank of Gudiváda channel at 2 miles 62 chains.	480	472	8	480	..	..	
61	Do. do. ..	..	..	Do. on the left bank of Gudiváda channel at 4 miles 35 chains	490	..	490	490	..	..	
62	Do. do. ..	..	..	Do. on the right bank of Gudiváda channel at 4 miles 70 chains	490	..	490	490	..	..	
63	Do. do. ..	..	..	Do. on the left bank of Gudiváda channel at 6 miles 59 chains	565	214	351	565	..	..	

Satement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Pulleru canal—cont.							
64	No. 449 I. of 17th May 1993 ..	(3) C.	..	Head sluice to Diwan Sahibcodu at 6 miles 3 furlongs of Butlercodu	400	..	400	400	..	..	
65	Do. do. ..	..	..	Head sluice to Vemavaram channel at 6 miles 4 furlongs of Butlercodu	500	..	500	500	..	..	
66	* No. 691 I. of 30th July 1884 ..	..	..	Masonry works on distributaries for which detailed estimates have not been prepared	33,763	574	33,189	33,763	..	..	Lump sum.
67	No. 587 I. of 4th July 1893 ..	..	..	Culvert on Kankipad road over Chintalacodu	510	..	510	510	..	..	
68	No. 824 I. of 22nd Sept. 1893 ..	..	..	Head sluice to Vennelacodu	470	..	470	470	..	..	
				Total ..	46,583	1,764	44,819	46,583	..	..	
69	No. 291 I. of 25th May 1891 ..	(3) L.	..	Kalidindicodu left side channel	2,500	2,012	488	2,500	..	..	
70	Superintending Engineer's No. 2989 K.S. of 9th March 1892.	..	..	Right side channel of Motur channel from 2 miles 63 chains	520	15	505	520	..	..	
71	Superintending Engineer's No. 1145 K.S. of 5th Aug. 1892.	..	..	Do. do. from sluice No. 5.	211	..	211	211	..	..	
72	No. 845 I. of 14th Oct. 1892 ..	..	..	Right side channel of Gudiváda channel	361	..	361	361	..	..	
73	No. 601 I. of 8th July 1893 ..	..	..	Left side channel of do.	325	..	325	325	..	..	
74	No. 573 I. of 29th June 1892 ..	..	..	Extending the Penjandra branch No. 1	450	..	450	450	..	..	
75	No. 824 I. of 22nd Sept. 1893 ..	..	..	Excavating Vennelacodu	430	..	430	430	..	..	
76	* No. 691 I. of 30th July 1884 ..	..	..	Distributaries	71,927	..	71,927	71,927	..	..	Lump sum.
77	No. 225 I. of 13th March 1893 ..	..	..	Improving the Butlercodu	1,670	..	1,670	1,670	..	..	
78	No. 587 I. of 4th July 1893 ..	..	..	Do. the Chintalacodu	1,320	..	1,320	1,320	..	..	
				Total ..	79,714	2,027	77,687	79,714	..	..	
79	No. 311 I. of 26th Mar. 1885 and No. 591 I. of 29th Nov. 1889.	(3) O.	..	Ankanagudem ramp	625	445	180	625	..	..	
80	Do. do. ..	..	..	Anamanapadi do.	585	..	585	585	..	..	Lump sums.
81	Do. do. ..	..	..	Rudrapaka do.	562	..	562	562	..	..	
82	No. $\frac{455}{A}$ I. of 3rd May 1884 ..	..	..	Pamarru cattle crossing	500	..	500	500	..	..	
83	Do. do. ..	..	..	Palacodu	185	..	185	185	..	..	
84	No. 463 I. of 16th July 1891 ..	..	..	Demarcation stones along Motur channel	770	5	765	770	..	..	
85	Superintending Engineer's No. 2989 K.S. of 29th March 1892.	..	..	Do. to right side channel to Motur channel.	20	..	20	20	..	..	
86	No. 824 I. of 22nd Sept. 1893 ..	..	..	Fixing demarcation stones along Vennelacodu ..	10	..	10	10	..	..	
87	No. 1472 K.S. of 23rd Sept. 1891 ..	..	..	Do. along Bantumilli canal, south side channel	80	..	80	80	..	..	

88	No. 291 I. of 25th March 1891 ..	..	..	Fixing demarcation stones along Kalidindicodu left side channel	170	39	131	170	..	..	
89	Superintending Engineer's No. 2777 K.S. of 6th Feb. 1891.	..	..	Ramp at Pedapalaparru	420	362	58	420	..	..	
90	No. 2576 K.S. of 26th Jan. 1893.	..	..	Demarcation stones to side channel along Bantumilli canal, south side channel	40	4	36	40	..	..	
91	No. 587 I. of 4th July 1893 ..	..	..	Demarcation stones along Chintalacodu	73	..	73	73	..	..	
92	No. 601 I. of 8th July 1893 ..	..	..	Do. left side channel of Gudivada channel	14	..	14	14	..	..	
				Total ..	4,054	855	3,199	4,054	..	..	
				Total (3) Distributaries ..	1,45,498	6,237	1,39,261	1,45,498	..	..	
				Total, Pulleru canal ..	1,52,253	6,542	1,67,856	1,74,398	22,145	..	
				Pamarru junction canal.							
93	No. 709 I. of 23rd Aug. 1892 ..	(2) K.	..	Lock lascars' sheds	810	344	466	810	..	..	
				Total, Pamarru junction canal ..	810	344	466	810	..	..	
				Polraz canal.							
94	No. 363 I. of 25th April 1893 ..	..	..	Single lock lascar's shed at Vinjeram	330	..	330	330	..	..	
95	Superintending Engineer's No. 2953 K.S. of 7th March 1892.	(2) O.	..	Demarcation stones from Mudinepalli bridge	300	..	300	300	..	..	
				Total (2) Main canals and branches ..	630	..	630	630	..	..	
96	No. 313 I. of 2nd July 1889 ..	(3) B.	..	Peddakommileru south side channel	2,014	1,513	501	2,014	..	..	
97	No. 476 I. of 20th May 1892 ..	..	..	Kykalur channel (loss of crop)	3,000	2,999	1	3,000	..	..	
98	No. 984 I. of 19th Dec. 1 91 ..	..	..	Branch No. 1 of Peddakommileru south side channel ..	4,390	..	4,390	4,390	..	..	
99	Superintending Engineer's No. 3123 K.S. of 11th March 1891.	..	..	Kallapullem side channel	550	..	550	550	..	..	
100	No. 531 I. of 1st July 1891 ..	..	..	Korlapad channel	610	..	610	610	..	..	
101	Superintending Engineer's No. 2909 K.S. of 25th Feb. 1893.	..	..	Korlapad side channel	278	..	278	278	..	..	
102	No. 635 I. of 19th July 1893 ..	..	..	Branch No. II, Peddakommileru south side channel ..	231	..	231	231	..	..	
103	....	..	..	Compensation for Chigurukota channel	..	49	..	49	49	..	
				Total ..	11,073	4,561	6,561	11,122	49	..	
104	No. 313 I. of 2nd July 1889 ..	(3) C.	..	Sluice to left bank at 10 miles 1,188 feet	335	42	293	335	..	..	
105	Do. do. ..	..	..	Do. to right bank at 10 miles 1,320 feet	337	20	317	337	..	..	
106	No. 606 I. of 11th July ..	..	..	Three earthenware pipe sluices at right bank	300	..	300	300	..	..	
107	No. 531 I. of 1st July 1891 ..	..	..	Head sluice to Koralapad channel	1,000	787	213	1,000	..	..	
108	No. 313 I. of 2nd July 1889 and Superintending Engineer's No. 2871 K.S. of 13th Feb. 1891.	..	..	Seven minor sluices	300	..	300	300	..	..	Lump sum.
109	Superintending Engineer's No. 2762 K.S. of 13th Feb. 1893.	..	..	Peddakommileru north side channel, right bank sluice, at .. .. .. 0 mile 3,000 feet ..	80	..	80	80	..	..	
110	Do. do. ..	..	..	Do. do. 1 ,, 720 ,, ..	80	..	80	80	..	..	
111	Do. do. ..	..	..	Do. do. 3 miles 1,660 ,, ..	80	..	80	80	..	..	
112	Do. do. ..	..	..	Do. do. 4 ,, 3,980 ,, ..	80	..	80	80	..	..	
113	Do. do. ..	..	..	Do. do. 6 ,, 950 ,, ..	174	..	174	174	..	..	

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Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Polraz canal—cont.							
114	Superintending Engineer's No. 2762 K.S. of 13th Feb. 1893 ..	..	..	Peddakommileru north side channel, right bank sluice, at 7 miles 1,965 feet ..	188	..	188	188	..	..	
115	Do. do. ..	..	..	Do. do. 8 ,, 2,285 ,, ..	89	..	89	89	..	..	
116	Do. do. ..	..	..	Do. do. 9 ,, 4,325 ,, ..	89	..	89	89	..	..	
117	Do. do. ..	..	..	Lingala channel head sluice	..	..	900	900	900	..	
118	Do. do. ..	..	..	Do. aqueduct	..	..	1,200	1,200	1,200	..	
119	No. 635 I. of 19th July 1893 ..	..	..	Head sluice to Peddakommileru, branch No. II ..	480	..	480	480	..	..	
120	Do. do. ..	..	..	No. 1 sluice at 0 mile 4,620 feet of do. ..	100	..	100	100	..	..	
121	Do. do. ..	..	..	,, 2 do. at 1 ,, 3,300 ,, do. ..	180	..	180	180	..	..	
122	Do. do. ..	..	..	,, 3 do. at 2 miles 1,900 ,, do. ..	180	..	180	180	..	..	
123	Do. do. ..	..	..	Under-tunnel at the head at 0 miles 3,960 feet ..	170	..	170	170	..	..	
124	No. 247 I. of 10th Mar. 1885 ..	..	..	Head sluice to Rudravaram channel	310	..	310	310	..	..	
125	.... ..	..	..	Kykalur road side channel head sluice	..	..	490	490	490	..	
				Total ..	4,552	849	6,293	7,142	2,590	..	
126	No. 313 I. of 2nd July 1889 ..	(3) L.	..	Ten minor distributaries	4,212	..	4,212	4,212	..	..	
127	No. 328 K.S. of 25th Mar. 1891 ..	..	..	Chevurcodu	2,300	1,764	536	2,300	..	..	Lump sum.
128	No. 551 I. of 1st July 1891 ..	..	..	Korlapad channel	1,680	1,235	445	1,680	..	..	
129	No. 2909 K.S. of 25th Feb. 1893 ..	..	..	Korlapad side channel	260	..	260	260	..	..	
130	.... ..	..	..	Lingala channel	..	..	2,000	2,000	2,000	..	
131	No. 635 I. of 19th July 1893 ..	..	..	Peddakommileru, branch No. II	1,950	..	1,950	1,950	..	..	
132	.... ..	..	..	Extending and improving Kykalur channel	..	..	3,600	3,600	3,600	..	
133	.... ..	..	..	Do. Peddakommileru south side channel.	..	..	1,630	1,630	1,630	..	
134	.... ..	..	..	Rudravaram channel, extending and improving ..	..	..	4,000	4,000	4,000	..	
135	.... ..	..	..	Kykalur road side channel	..	..	360	360	360	..	
				Total ..	10,402	2,999	18,993	21,992	11,590	..	
136	Superintending Engineer's No. 3123 K.S. of 11th Mar. 1891 ..	(3) O.	19 50	Demarcation stones along Kallapalem side channel ..	80	14	66	80	..	..	
137	No. 531 I. of 1st July 1891 ..	..	12 5	Do. Korlapad channel	60	10	50	60	..	..	
138	No. 984 I. of 19th Dec. 1891 ..	..	3 1	Do. branch No. 1, Peddakommileru south side channel ..	260	43	217	260	..	..	
139	No. 313 I. of 2nd July 1889 ..	..	..	Cattle ramps at 5 miles 1,122 feet	272	..	272	272	..	..	
140	Do. do. ..	..	..	Do. on Peddakommileru south side channel ..	464	338	126	464	..	..	

141	Do. do. ..	..	..	Do. do. north side channel ..	387	224	163	387	..	..	
142	Superintending Engineer's No. 3286 K.S. of 25th Mar. 1891 ..	..	..	Do. Chevurukodu	200	50	150	200	..	..	
143	Superintending Engineer's No. 2909 K.S. of 25th Feb. 1893 ..	..	..	Do. Korlapad side channel	22	..	22	22	..	..	
144	No. 635 I. of 19th July 1893 ..	..	..	Demarcation stones along Pedakommileru south side channel, branch No. II	59	..	59	59	..	..	
				Total ..	1,804	679	1,125	1,804	..	..	
				Total (3) Distributaries ..	27,831	9,088	32,972	42,060	14,229	..	
145	Para. 77 of the note printed in G.O. No. 3528 of 22nd Dec. 1873.	(4) B.	..	Upputeru	150	..	150	150	..	..	
146	Superintending Engineer's No. 861 K.S. of 2nd July 1890.	..	..	Compensation for ring channel through Kottada weir ..	35	..	35	35	..	..	
				Total ..	185	..	185	185	..	..	
147	Do. do. ..	(4) L.	..	Embanking Upputeru	2,710	..	2,710	2,710	..	..	
148	Do. do. ..	..	..	Do.	795	..	795	795	..	..	
				Total ..	3,505	..	3,505	3,505	..	..	
				Total (4) Drainage and protective works ..	3,690	..	3,690	3,690	..	..	
				Total, Polraz canal ..	32,151	9,088	37,292	46,380	14,229	..	
				Bantumilli canal.							
149	No. 30 I. of 13th Jan. 1883 ..	(2) B.	..	Compensation for land—old claims	30	..	30	30	..	..	
150	No. 710 I. of 4th Dec. 1890 ..	..	..	Compensation for Bantumilli canal extension to Upputeru.	6,200	441	5,759	6,200	..	..	
				Total ..	6,230	441	5,789	6,230	..	..	
151	No. 710 I. of 4th Dec. 1890 and No. 411 I. of 6th May 1893.	(2) I.	..	Tidal lock near Lakshmipuram	31,000	25,342	5,658	31,000	..	..	
152	Do. do. ..	..	..	Lock weir near Lakshmipuram	4,910	4,641	269	4,910	..	..	
				Total ..	35,910	29,983	5,927	35,910	..	..	
153	No. 30 I. of 13th Jan. 1883 ..	(2) K.	..	Chandrala rest-house	1,300	..	1,300	1,300	..	..	Lump sum.
154	No. 363 I. of 25th April 1893 ..	..	..	Single lock lascar's shed at Kamalapuram	310	..	310	310	..	..	
				Total ..	1,610	..	1,610	1,610	..	..	
155	No. 710 I. of 4th Dec. 1890 ..	(2) L.	..	Canal extension	46,980	43,673	3,307	46,980	..	..	
156	No. 30 I. of 13th Jan. 1883 No. 349 I. of 1st April 1885 and No. 710 I. of 4th Dec. 1890 }	..	..	Widening and deepening	15,300	10,278	5,022	15,300	..	..	
157	.... ..	..	..	Widening from Cowtaram to Kamalapuram	..	..	3,550	3,550	3,550	..	
				Total ..	62,280	53,951	11,879	65,830	3,550	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Bantumilli canal—cont.							
158	No. 30 I. of 13th Jan. 1883 ..	(2) O.	..	Cowtaram ramp ..	280	..	280	280	..	..	Lump sums.
159	Do. do. ..	..	..	Daggumilli do. ..	300	..	300	300	..	..	
160	Do. do. ..	..	..	Cherandra do. ..	420	..	420	420	..	..	
161	Do. do. ..	..	..	Nallagunta do. ..	290	..	290	290	..	..	
162	Do. do. ..	..	..	Kalanagunta do. ..	190	..	190	190	..	..	
163	Do. do. ..	..	..	Satulur do. ..	360	..	360	360	..	..	
164	Do. do. ..	..	..	Amudalapalli do. ..	345	..	345	345	..	..	
165	Do. do. ..	..	..	Cruttivennu do. ..	530	..	530	630	..	..	
166	Do. do. ..	..	..	Chendrala do. ..	515	..	515	515	..	..	
167	No. 710 I. of 4th Dec. 1890 ..	..	..	Demarcation stones along canal extension ..	480	108	372	480	..	..	
				Total ..	3,710	108	3,602	3,710	..	..	
				Total (2) Main canals and branches ..	1,09,740	84,483	28,807	1,13,290	3,550	..	
168	Superintending Engineer's No. 3199 K.S. of 24th Mar. 1893 ..	(3) B.	..	Old claims—Chennu Addacodu ..	159	..	159	159	..	..	
169	No. 490 I. of 28th Nov. 1889 ..	..	..	Compensation for land required for the main distributary ..	3,436	..	3,436	3,436	..	..	
170	Superintending Engineer's No. 2198 K.S. of 29th Nov. 1890 ..	..	..	Right side channel of Kaldindi ..	210	51	159	210	..	..	
171	....	..	..	Kamalapuram north side channel ..	1,456	..	1,456	1,456	..	..	
				Total ..	5,261	51	5,210	5,261	..	..	
172	No. 738 I. of 29th Aug. 1892 ..	(3) C.	..	Fender piles to the head of Kamalapuram lock weir ..	1,080	821	259	1,080	..	..	
173	No. 412 I. of 6th May 1893 ..	..	..	Head sluice to Lellaboracodu ..	390	..	390	390	..	..	
174	No. 590 I. of 28th Nov. 1889 ..	..	..	Sluice to Doddicodu ..	540	468	72	540	..	..	
175	Do. do. ..	..	..	Sluice to Rallaguntacodu ..	555	479	76	555	..	..	
176	Do. do. ..	..	..	Bridge with regulator on Bantumilli road at 5 miles 2,070 feet ..	2,202	2,073	129	2,202	..	..	
177	Do. do. ..	..	..	Sluice to road side channel ..	917	803	114	917	..	..	
178	Do. do. ..	..	..	Do. Gangánammacodu ..	493	434	59	493	..	..	
179	Do. do. ..	..	..	Do. Vaivaka channel ..	842	682	160	842	..	..	
180	Do. do. ..	..	..	Do. Nadimircodu ..	460	318	142	460	..	..	
181	Do. do. ..	..	..	Do. Avakur channel ..	468	384	84	468	..	..	
182	Do. do. ..	..	..	Do. Tail escape ..	270	124	146	270	..	..	
183	No. 257 I. of 23rd Mar. 1893 ..	..	..	Do. Vurinicodu on left bank ..	430	178	252	430	..	..	

184	No. 257 I. of 23rd March 1893 ..	..	..		Sluice to Chennur Addacodu on left bank	460	143	317	460	..	..	
185	Do. do. ..	..	..		Do. Tummidicodu do.	455	145	310	455	..	..	
186	Do. do. ..	..	..		Do. Gorricodu do.	455	147	308	455	..	..	
187	Do. do. ..	..	..		Do. Rallaguntacodu do.	500	154	346	500	..	..	
188	Do. do. ..	..	..		Do. Vonudurru do.	510	180	330	510	..	..	
189	Do. do. ..	..	..		Do. Vaivaka channel do.	530	169	361	530	..	..	
190	....	..	..		Head sluice to Kamalapuram north side channel ..	1,040	..	1,040	1,040	..	..	
191	....	..	..		No. 1 sluice at 1 mile 7 furlongs and 530 feet of Kamalapuram north side channel ..	185	..	185	185	..	..	
192	....	..	..		,, 2 do. at 2 miles 7 furlongs 150 feet	179	..	179	179	..	..	
193	....	..	..		,, 3 do. at 3 ,, 7 ,, 400 ,, ...	175	..	175	175	..	..	
194	....	..	..		,, 4 do. at 4 ,, 5 ,, 300 ,, ...	162	..	162	162	..	..	
195	....	..	..		,, 5 do. at 5 ,, 3 ,, 200 ,, ...	177	..	177	177	..	..	
196	....	..	..		,, 6 do. at 5 ,, 6 ,, 330 ,, ...	172	..	172	172	..	..	
197	....	..	..		Head sluice to Bantumilli north side channel	..	..	600	600	600	..	
					Total ..	13,647	7,702	6,545	14,247	600	..	
198	No. 590 I. of 20th Nov. 1889 ..	(3) L.	..		Minor channel	3,150	..	3,150	3,150	..	..	Lump sum.
199	No. 3199 K.S. of 24th March 1893.	..	..		Chennur Addacodu	671	107	564	671	..	..	
200	....	..	..		Improvements to distributaries of main distributary ..	..	..	5,000	5,000	5,000	..	
201	....	..	..		Do. to Kamalapuram south side channel ..	..	..	1,000	1,000	1,000	..	
202	....	..	..		Kamalapuram north side channel	3,590	..	3,590	3,590	..	..	
203	....	..	..		Bantumilli do.	..	..	2,400	2,400	2,400	..	
					Total ..	7,411	107	15,704	15,811	8,400	..	
204	No. 590 I. of 20th Nov. 1889 ..	(3) O.	..		Demarcation stones along Bantumilli main distributary.	418	62	356	418	..	..	
205	No. 590 I. of 20th Nov. 1889 and Superintending Engineer's No. 2198 K.S. of 29th Nov. 1890.	..	..		Do. along left side channel of Bantumilli canal	30	14	16	30	..	..	
206	Superintending Engineer's No. 3199 K.S. of 24th March 1893.	..	..		Do. along Chennur Addacodu	20	..	20	20	..	..	
207	Superintending Engineer's No. 1032 K.S. of 5th Aug. 1891.	..	..		Do. along right side channel of Kamalapuram south side channel ..	150	24	126	150	..	..	
208	....	..	..		Do. along Kamalapuram north side channel.	134	..	134	134	..	..	
					Total ..	752	100	652	752	..	..	
					Total (3) Distributaries ..	27,071	7,960	28,111	36,071	9,000	..	
					Total, Bantumilli canal ..	1,36,811	92,443	56,918	1,49,361	12,550	..	
					Ellore canal.							
209	Superintending Engineer's No. 2244 K.S. of 12th Dec. 1891.	(2) B.	..		Rest-house at Perikede	30	..	30	30	..	..	
210	No. 314 I. of 2nd June 1888 ..	(2) F.	32	29	Inlet	190	..	190	190	..	..	
211	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	(2) I.	..		Kalaparru bridge towpath	430	..	430	430	..	..	
212	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	..	..		Ellore do.	455	..	455	455	..	..	
213	No. 304 I. of 7th April 1893 ..	..	..		Wharf wall at Ellore	11,300	402	10,898	11,300	..	..	
					Total ..	12,185	402	11,783	12,185	..	..	

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Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Ellore canal—cont.							
214	No. 314 I. of 2nd June 1888 ..	(2) O.	9 75	Nakkalam cattle-crossing	436	..	436	436	..	..	
				Total (2) Main canals and branches ..	12,841	402	12,439	12,841	..	..	
215	No. 314 I. of 2nd June 1888 ..	(3) B.	11 70	Kesavapalli channel	200	..	200	200	..	..	Lump sum.
216	No. 226 I. of 13th March 1893 ..	..	14 30½	Ungutur channel	3,370	..	3,370	3,370	..	..	
217	Do. do. ..	..	..	Do. right side channel	105	..	105	105	..	..	
218	Do. do. ..	..	..	Do. left do.	720	..	720	720	..	..	
219	No. 314 I. of 2nd June 1888 and 2 I. of 4th January 1892.	..	17 26	Ponukumad channel	910	..	910	910	..	..	
220	Do. do. ..	..	..	Do. right side channel	50	..	50	50	..	..	
221	Do. do. ..	..	..	Do. left do.	160	..	160	160	..	..	
222	No. 397 I. of 2nd May 1893 ..	..	..	Do. left side extension	310	..	310	310	..	..	
223	No. 226 I. of 13th March 1893 ..	..	20 41	Chirivada channel	2,489	..	2,489	2,489	..	..	
224	No. 65 I. of 21st January 1892 ..	..	22 36	Viravalli do.	1,640	..	1,640	1,640	..	..	
225	Do. do. ..	..	..	Do. right side channel	410	..	410	410	..	..	
226	No. 314 I. of 2nd June 1888 and No. 897 of 21st November 1891.	..	26 2	Kakulapad channel	1,030	..	1,030	1,030	..	..	
227	No. 635 I. of 9th July 1884 ..	..	36 20	Mupparru do.	450	..	450	450	..	..	
228	No. 373 I. of 28th April 1893 ..	..	..	Demarcating land for Madepalli channel	300	..	300	300	..	..	
229	No. 576 I. of 22nd July 1891 ..	..	..	Wutlur right side channel	137	..	137	137	..	..	
230	Do. do. ..	..	..	Do. left do.	130	..	130	130	..	..	
231	No. 2 I. of 4th January 1892 ..	..	30 40	Pedapad channel	830	..	830	830	..	..	
232	Do. do. ..	..	..	Do. right side channel	110	..	110	110	..	..	
233	Do. do. ..	..	..	Do. left do.	170	..	170	170	..	..	
234	No. 455 I. of 18th May 1893 ..	..	..	Do. do. extension	163	..	163	163	..	..	
235	No. 488 I. of 2nd June 1893 ..	..	28 60	Gogunta channel	1,930	..	1,930	1,930	..	..	
236	Do. do. ..	..	..	Do. right side channel	180	..	180	180	..	..	
237	Do. do. ..	..	..	Do left do.	340	..	340	340	..	..	
238	No. 496 I. of 6th June 1893 ..	..	40 10	Chataparru channel	910	..	910	910	..	..	
239	....	..	23 91	Tippanagunta channel	..	..	400	400	400	..	
				Total ..	17,044	..	17,444	17,444	400	..	

240	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	(3) C.	11 70	Kesarapalli channel	350	..	350	350	..	..	Lump sum.
241	No. 226 I. of 13th Mar. 1893	..	14 30½	Ungutur do. head sluice	2,340	2	2,338	2,340	..	..	
242	Do. do.	..	..	Drop No. 1	600	..	600	600	..	..	
243	Do. do.	..	..	Do. ,, 2	350	..	350	350	..	..	
244	Do. do.	..	..	Tail escape	395	..	395	395	..	..	
245	Do. do.	..	20 41	Chirivada channel, head sluice	1,362	..	1,362	1,362	..	..	
246	Do. do.	..	..	Drop No. 1	685	..	685	685	..	..	
247	Do. do.	..	..	Do. ,, 2	570	..	570	570	..	..	
248	Do. do.	..	..	Do. ,, 3	430	..	430	430	..	..	
249	Do. do.	..	..	Do. ,, 4	450	..	450	450	..	..	
250	No. 635 I. of 9th July 1884	..	..	Minor sluices, Mupparru channel	390	294	96	390	..	..	
251	No. 314 I. of 2nd June 1888	(3) C.	39 43	Madepalli channel, under-tunnel	1,234	651	583	1,234	..	..	
252	Do. do.	..	39 54	Do. culvert	1,741	1,556	185	1,741	..	..	
253	Do. do.	..	39 73	Do. under-tunnel	1,234	798	436	1,234	..	..	
254	Do. do.	..	..	Do. (9) minor sluices	1,350	92	1,258	1,350	..	..	
255	No. 576 I. of 22nd July 1891	..	..	Watlur channel drop	390	250	140	390	..	..	
256	No. 897 I. of 21st Nov. 1891	..	..	Under-tunnel at 11,240 feet of Kakulapad channel	900	460	440	900	..	..	
257	Do. do.	..	..	Field masonry sluice, No. 1, left bank	140	4	136	140	..	..	
258	Do. do.	..	..	Do. ,, 2 do.	140	4	136	140	..	..	
259	Do. do.	..	..	Do. ,, 3 do.	150	..	150	150	..	..	
260	Do. do.	..	..	Do. ,, 4 do.	180	..	180	180	..	..	
261	Do. do.	..	..	Do. ,, 1, right bank	140	..	140	140	..	..	
262	Do. do.	..	..	Do. ,, 2 do.	180	..	180	180	..	..	
263	No. 397 I. of 2nd May 1893	..	..	Improvements to left side vent, Punukumad left side channel	120	..	120	120	..	..	
264	Do. do.	..	..	Aqueduct do. do.	1,730	..	1,730	1,730	..	..	
265	No. 2 I. of 4th Jan. 1892	..	..	Peddapad channel, drop No. 1	400	366	34	400	..	..	
266	Do. do.	..	..	Do. do ,, 2	400	340	60	400	..	..	
267	Do. do.	..	..	Do. do ,, 3	370	318	52	370	..	..	
268	Do. do.	..	30 40	Four field masonry sluices	640	96	544	640	..	..	
269	No. 595 I. of 7th July 1893	..	..	Road culvert to Punukollu road	680	148	532	680	..	..	
270	No. 65 I. of 21st Jan. 1892	..	..	Viravalli channel, drop No. 1	320	99	221	320	..	..	
271	Do. do.	..	..	Do. do. ,, 2	320	93	227	320	..	..	
272	Do. do.	..	..	Do. do. ,, 3	290	84	206	290	..	..	
273	Do. do.	..	..	Do. field masonry sluice No. 1	190	5	185	190	..	..	
274	Do. do.	..	..	Do. do. ,, 2	210	2	208	210	..	..	
275	No. 488 I. of 2nd June 1893	(3) C.	28 60	Gogunta channel, head sluice	2,380	..	2,380	2,380	..	..	
276	Do. do.	..	..	Do. drop No. 1	520	..	520	520	..	..	
277	Do. do.	..	..	Do. do. ,, 2	520	..	520	520	..	..	
278	Do. do.	..	..	Do. do. ,, 3	530	..	530	530	..	..	
279	Do. do.	..	..	Do. do. ,, 4	470	..	470	470	..	..	
280	No. 496 I. of 6th June 1893	..	40 10	Chataparru channel, head sluice	1,050	..	1,050	1,050	..	..	
281	Do. do.	..	..	Do. drop No. 1	500	..	500	500	..	..	
282	Do. do.	..	..	Do. do. ,, 2	500	..	500	500	..	..	
283	Do. do.	..	23 1	Tippanagunta channel, masonry works	..	..	3,000	3,000	3,000	..	
				Total	27,841	5,662	25,179	30,841	3,000	..	
284	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	(3) L.	11 70	Kesarapalli channel	650	..	650	650	..	..	Lump sum.
285	No. 226 I. of 13th Mar. 1893	..	14 30½	Ungutur channel, excavation	4,560	..	4,560	4,560	..	..	
286	Do. do.	..	..	Do. earthenware pipes	460	..	460	460	..	..	
287	Do. do.	..	..	Ungutur right side channel, excavation	60	..	60	60	..	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure. Expenditure incurred to end of 1892–93.	Expenditure. Further expenditure.	Expenditure. Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Ellore canal—cont.							
288	No. 226 I. of 13th Mar. 1893 ..	..	..	Ungutur right side channel, earthenware pipes ..	70	..	70	70	..	..	
289	Do. do. ..	..	..	Ungutur left side channel, excavation	620	..	620	620	..	..	
290	Do. do. ..	..	..	Do. do. earthenware pipes	140	..	140	140	..	..	
291	No. 2 I. of 4th Jan. 1892, para. 50 of the note printed in G.O. No. 3528 of 22nd Dec. 1876.	..	..	Ponukumad channel, excavation	2,110	1,657	453	2,110	..	..	
292	No. 397 I. of 2nd May 1893 ..	..	..	Do. left side channel, extension ..	370	..	370	370	..	..	
293	Do. do. ..	..	..	Do. earthenware pipes	100	..	100	100	..	..	
294	Do. do. ..	..	..	Do. palmyra spouts	30	15	15	30	..	..	
295	No. 226 I. of 13th Mar. 1893, Para. 50 of the note printed in G.O. No. 3528 of 22nd Dec. 1876.	(3) L.	20 41	Chirivada channel, excavation	4,954	..	4,954	4,954	..	..	
296	Do. do. ..	..	..	Do. earthenware pipes	610	..	610	610	..	..	
297	No. 576 I. of 22nd July 1891 ..	..	..	Viravalli channel, box sluices and spouts	280	3	277	280	..	..	
298	Do. do. ..	..	..	Viravalli right side channel, excavation	280	247	33	280	..	..	
299	Do. do. ..	..	..	Do. do. palmyra spouts	20	..	20	20	..	..	
300	Do. do. ..	..	..	Kakulapad channel	1,950	1,461	489	1,950	..	..	
301	Do. do. ..	..	..	Do. six box sluices	300	..	300	300	..	..	
302	Do. do. ..	..	..	Side channel to Mupparru channel	408	313	95	408	..	..	
303	No. 303 I. of 7th April 1893 ..	..	..	Madepalli channel, extension	2,150	..	2,150	2,150	..	..	
304	No. 644 I. of 18th Sept. 1886 ..	..	39 11	Do. side channel	570	..	570	570	..	..	
305	Do. do. ..	..	..	Channel parallel to Ellore canal on left of do. ..	400	24	376	400	..	..	
306	Do. do. ..	..	..	Do. do. on right of do.	44	..	44	44	..	..	
307	Do. do. ..	..	39 54	Side channel right of Madepalli channel	43	..	43	43	..	..	
308	No. 488 I. of 2nd June 1893 ..	..	28 60	Gogunta channel, excavation	2,490	..	2,490	2,490	..	..	
309	Do. do. ..	..	..	Do. earthenware pipes	150	..	150	150	..	..	
310	Do. do. ..	..	..	Gogunta channel, right side channel, excavation ..	210	..	210	210	..	..	
311	Do. do. ..	..	..	Do. earthenware pipes	80	..	80	80	..	..	
312	Do. do. ..	..	..	Gogunta channel, left side channel, excavation ..	630	..	630	630	..	..	
313	Do. do. ..	..	..	Do. earthenware pipes	160	..	160	160	..	..	
314	No. 496 I. of 6th June 1893 ..	..	..	Chataparru channel, excavation	780	..	780	780	..	..	
315	Do. do. ..	..	..	Do. earthenware pipes	80	..	80	80	..	..	
316	No. 576 I. of 22nd July 1891 ..	..	..	Wutlur right side channel	292	214	78	292	..	..	
317	Do. do. ..	(3) L.	..	Pedapad channel	1,560	1,287	173	1,560	..	..	
318	No. 455 I. of 18th May 1893 ..	..	..	Do. left side channel, extension	1,377	..	1,377	1,377	..	..	
319	Do. do. ..	..	..	Tippanagunta channel	..	..	2,000	2,000	2,000	..	
				Total ..	28,988	5,321	25,667	30,988	2,000	..	

320	No. 467 I. of 17th Nov. 1886	(3) O.	..	Madepalli channel, cattle-crossing	394	..	394	394	..	..
321	Do. do.	..	..	Do. demarcation stones	..	..	300	300	300	..
322	No. 226 I. of 13th Mar. 1893	..	14 30½	Demarcation stones, Ungutur channel	260	..	260	260	..	..
323	Do. do.	..	..	Do. right side channel of do.	10	..	10	10	..	..
324	Do. do.	..	..	Do. left do. do.	40	..	40	40	..	..
325	Do. do.	..	20 41	Do. Chirivada channel	250	..	250	250	..	..
326	No. 897 I. of 21st Nov. 1891	..	..	Do. Kakulapad channel	200	..	200	200	..	..
327	Do. do.	..	..	Do. Ponukumad channel	140	25	115	140	..	..
328	Do. do.	..	..	Do. do. right side channel	10	..	10	10	..	..
329	Do. do.	..	..	Do. do. left side do.	20	..	20	20	..	..
330	No. 397 I. of 2nd May 1893	..	..	Do. do. do. extension	30	..	30	30	..	..
331	No. 2 I. of 4th Jan. 1892	..	..	Do. Pedapad channel	100	13	87	100	..	..
332	Do. do.	..	..	Do. do. right side channel	12	2	10	12	..	..
338	Do. do.	..	..	Do. do. left side do	50	12	38	50	..	..
334	No. 455 I. of 18th May 1893	..	..	Do. do. do. extension	60	..	60	60	..	..
335	No. 576 I. of 22nd July 1891	..	..	Do. Wutlur channel	50	12	38	50	..	..
336	Do. do.	..	..	Do. do. right side channel	21	3	18	21	..	..
337	Do. do.	..	..	Do. do. left do.	18	2	16	18	..	..
338	No. 65 I. of 21st January 1892	..	..	Do. Viravalli channel	140	4	136	140	..	..
339	Do. do.	..	..	Do. do. right side channel	30	..	30	30	..	..
340	No. 488 I. of 2nd June 1893	..	28 60	Do. Gogunta channel	130	..	130	130	..	..
341	Do. do.	..	..	Do. do. right side channel	30	..	30	30	..	..
342	Do. do.	..	..	Do. do. left side do.	50	..	50	50	..	..
343	No. 496 I. of 6th June 1893	(3) O.	..	Do. Chataparru channel	140	..	140	140	..	..
				Total	2,185	73	2,412	2,485	300	..
				Total (3) Distributaries	76,058	11,056	70,702	81,758	5,700	..
344	No. 314 I. of 2nd June 1888	(4) B.	8 40	Nakkalam drain	160	..	160	160	..	..
345	Do. do.	..	10 20	Kesavapalli do.	308	..	308	308	..	..
346	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876	..	16 0	Avatipalli do.	300	..	300	300	..	..
347	Do. do.	..	17 0	Atukur drain	80	..	80	80	..	..
348	Do. do.	..	19 0	Pottipad drain	50	..	50	50	..	..
349	No. 314 I. of 2nd June 1888	..	..	Ampapuram do.	255	..	255	255	..	..
350	No. 314 I. of 2nd June and No. 410 I. of 14th May 1891.	..	23 10	Viravalli do.	250	..	250	250	..	..
351	Do. do.	..	25 5	Narasanapalem drain	90	..	90	90	..	..
352	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	..	24 0	Canumole drain	225	..	225	225	..	..
353	Do. do.	..	27 0	Perikeed do.	170	..	170	160	..	..
354	Do. do.	..	28 0	Ramileru do.	80	..	80	80	..	..
355	No. 314 I. of 2nd June 1888	..	29 70	Totagudem do.	50	..	50	50	..	..
356	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	..	31 0	Punukollu do.	40	..	40	40	..	..
357	No. 314 I. of 2nd June 1888	..	33 40	Pedapad do.	100	..	100	100	..	..
358	Do. do.	..	..	East Tammiluru flood bank	80	..	80	80	..	..
359	Para 50 of the note printed in No. 3528 of 22nd Dec. 1876.	..	35 77	Wutlur drain	70	..	70	70	..	..
360	Do. do.	..	37 10	West Tammileru drain	300	..	300	300	..	..
361	Do. do.	..	39 5	Jalipudi drain	100	..	100	100	..	..
362	No. 653 I. of 13th Nov. 1890	..	..	Compensation for Budameru widening	480	..	480	480	..	..

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Ellore canal—cont.							
363	No. 495 I. of 9th Sept. 1890 ..	..	..	Compensation for raising the Budameru flood bank from Moparru to Aripirala.	104	..	104	104	..	..	
				Total ..	3,292	..	3,292	3,292	..	..	
364	....	(4) C.	..	Ten foot bridges across drains	..	..	5,000	5,000	5,000	..	
365	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	(4) L.	27 0	Perikeed drain	300	..	300	300	..	..	
366	Do. do. ..	..	28 0	Ramileru do.	60	..	60	60	..	..	
367	Do. do. ..	..	31 0	Punukollu do.	20	..	20	20	..	..	
368	Do. do. ..	..	35 77	Wutlur do.	300	..	300	300	..	..	Lump sum.
369	Do. do. ..	..	37 10	West Tammileru drain	2,500	..	2,500	2,500	..	..	
370	Do. do. ..	..	39 5	Jalipudi drain	300	..	300	300	..	..	Lump sum.
371	Do. do. ..	..	..	East Tammileru drain	2,165	..	2,165	2,165	..	..	
372	No. 314 I. of 2nd June 1888 ..	..	8 40	Nakkalam drain	425	..	425	425	..	..	
373	Para. 50 of the note printed in No. 3528 of 22nd Dec. 1876.	..	10 21	Kesavapalli do.	300	..	300	300	..	..	
374	Do. do. ..	..	16 0	Avatapalli do.	400	..	400	400	..	..	
375	Do. do. ..	..	17 0	Atukur do.	490	..	490	490	..	..	
376	Do. do. ..	..	19 0	Pottipad do.	150	..	150	150	..	..	
377	No. 314 I. of 2nd June 1888 ..	..	21 20	Ampapuram drain	3,187	1,835	1,352	3,187	..	..	
378	Para. 58 of the note printed in No. 3528 of 2nd Dec. 1876	..	22 50	Nellivagu do.	830	..	830	830	..	..	
379	Do. do. ..	..	24 0	Canumole do.	1,465	..	1,465	1,465	..	..	
380	No. 653 I. of 13th Nov. 1890 ..	..	..	Widening the last 3 miles of the Budameru	19,120	15,248	3,872	19,120	..	..	
381	No. 495 I. of 9th Sept. 1890 ..	..	..	Raising flood bank to the Budameru	4,946	3,085	1,861	4,946	..	..	
				Total ..	36,958	20,168	16,790	36,958	..	..	
				Total, (4) Drainage and protective works ..	40,250	20,168	25,082	45,250	5,000	..	
				Total, Ellore canal ..	1,29,149	31,626	1,08,223	1,39,849	10,700	..	
				Ryves canal.							
382	No. 145 I. of 12th Feb. 1885 ..	(3) B.	..	Dosapad channel	6,960	4,298	2,662	6,960	..	..	
383	No. 354 I. of 11th May 1886 ..	..	..	Juvvanapudi branch of Kunderu channel	1,782	1,620	162	1,782	..	..	
384	No. 406 I. of 25th July 1890 ..	..	..	Aripirala branch	1,070	..	1,070	1,070	..	..	

385	Do. do.	..	..	..	Pamalapad branch	550	..	550	558	..	..	
386	No. 679 I. of 31st July 1893	..	..	..	Bhumicodu from Dosapad channel	83	..	83	83	..	..	
387	....		..	..	Side channel from left bank of Dosapad channel at 10 miles 300 feet.	220	..	220	220	..	..	
388	Do. do.	..	..	..	Left side channel of Dosapad channel from below Aripirala branch, head sluice.	510	..	510	510	..	..	
					Total ..	11,175	5,918	5,257	11,175	..	..	
389	Do. do.	..	(3) C.	..	Aripirala Panta Codu, head sluice ..	390	156	234	390	..	..	
390	No. 395 I. of 2nd May 1893	..	..	..	Dam at 2 miles 5 furlongs of Neharalli codu	560	..	560	560	..	..	
391	Do. do.	..	..	..	Dam at 5 miles 17 chains of do.	480	..	480	480	..	..	
392	....		..	..	Head sluice to left side channel of Dosapad channel from below Aripirala branch, head suice.	620	..	620	620	..	..	
393	....		..	..	Road culvert to Perikeed road							
394	No. 395 I. of 2nd May 1893	..	..	..	Sluice to Bhumicodu	430	..	430	430	..	..	
395	Do. do.	..	..	..	Do. right side channel	360	..	360	360	..	..	
396	Do. do.	..	..	..	Do. left do. do.	300	..	300	300	..	..	
397	Do. do.	..	..	..	Do. Tamirasa do.	270	..	270	270	..	..	
398	Do. do.	..	..	..	Do. Rachacodu	300	..	300	300	..	..	
399	No. 354 I. of 11th May 1886	..	..	..	Masonry works	260	..	260	260	..	..	
400	No. 679 I. of 31st July 1893	..	..	..	Sluice to Bhumicodu from Dosapad channel	2,666	..	2,666	2,666	..	..	Lump sum.
401	Do. do.	..	..	..	Tail escape to do. do.	550	..	550	550	..	..	
402	....		..	..	Head sluice to side channel from left bank of Dosapad channel at 10 miles 300 feet.	142	..	142	142	..	..	
403	....		..	..	Head sluice at 11 miles of Dosapad channel ..	680	..	680	680	..	..	
404	No. 649 I. of 24th July 1893	..	..	..	Pipe sluices in right bank of Dosapad channel	..	..	1,500	1,500	1,500	..	
						530	..	530	530	..	..	
					Total ..	8,538	156	9,882	10,038	1,500	..	
405	No. 799 I. of 9th October 1882	..	(3) L.	..	Enlarging and improving minor channels						..	
406	No. 395 I. of 2nd May 1893	..	..	..	Bhumicodu	118	..	118	118	..	..	Lump sum.
407	Do. do.	..	..	..	Do. right side channel	139	..	139	139	..	..	
408	Do. do.	..	..	..	Do. left do.	399	..	399	399	..	..	
409	Do. do.	..	..	..	Tamirasa channel	282	..	282	282	..	..	
410	No. 354 I. of 11th May 1886	..	..	..	Earthwork	990	..	990	990	..	..	
411	....		..	..	Improvements to Kunderu channel	8,680	132	8,548	8,680	..	..	Lump sum.
412	....		..	..	Do. Mustaphankhancodu	..	..	2,000	2,000	2,000	..	
413	....		..	..	Do. North side channel of Dosapad channel.	..	..	6,000	6,000	6,000	..	
414	....		..	..	Do. Aripirala branch	..	..	3,060	3,000	3,000	..	
415	....		..	..	Left side channel from Dosapad channel from below Aripirala branch, head sluice.	..	..	1,000	1,000	1,000	..	
						443	..	443	443	..	..	
416	....		..	..	Improvements to south side channel of Dosapad channel.	..	..	1,000	1,000	1,000	..	
417	....		..	..	Side channel from left bank of Dosapad channel, 10 miles 300 feet.	400	..	400	400	..	..	
418	No. 679 I. of 31st July 1893	..	..	..	Excavating Bhumicodu channel	535	..	535	535	..	..	
					Total ..	11,986	132	24,854	24,986	13,000	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure. Expenditure incurred to end of 1892–93.	Expenditure. Further expenditure.	Expenditure. Total	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Ryves canal—cont.							
419	No. 354 I. of 11th May 1886 ..	(3) O.	..	Kunderu channel, cattle ramp at Katur	197	..	197	197	..	..	
420	No. 563 I. of 16th July 1891 ..	..	..	Do. demarcation stones	330	..	330	330	..	..	
421	Do. do. ..	..	..	Lingavaram channel do.	240	..	240	240	..	..	
422	Do. do. ..	..	..	Neharalli codu do.	410	79	331	410	..	..	
423	Do. do. ..	..	..	Juvvanapudi branch channel	260	..	260	260	..	..	
424	Do. do. ..	..	..	Dosapad channel do.	800	..	800	800	..	..	
425	Do. do. ..	..	..	Kalavapamula branch do.	200	..	200	200	..	..	
426	Do. do. ..	..	..	Komatigunta channel do.	240	..	240	240	..	..	
427	....	..	..	Demarcation stones for left side channel of dosapad channel from below Aripirala branch head sluice.	27	..	27	27	..	..	
428	No. 563 I. of 16th July 1893 ..	..	..	North side channel of Dosapad channel from below Aripirala branch channel, head sluice.	400	..	400	400	..	..	
429	....	..	..	Demarcation stones for side channel from left bank of Dosapad channel at 10 miles 300 feet.	30	..	30	30	..	..	
430	....	..	..	Improvements to ramps on Dosapad channel and providing revetments.	..	..	3,000	3,000	3,000	..	
				Total ..	3,134	79	6,055	6,134	3,000	..	
				Total (3) Distributaries ..	34,833	6,285	46,048	52,333	17,500	..	
				Total, Ryves canal ..	34,833	6,285	46,048	52,333	17,500	..	
				Bank canal.							
431	....	(2) B.	..	Compensation	..	..	5,000	5,000	5,000	..	
				Total (2) Main canals and branches	..	..	5,000	5,000	5,000	..	
				Total, Bank canal ..	..	..	5,000	5,000	5,000	..	
				Drain from Inampudi aqueduct to Dayyapu calva.							
432	No. 962 I. of 14th Nov. 1885 ..	(4) B.	..	Compensation for land	5,710	1,849	3,861	5,710	..	..	

				Uppalur drain.							
433	Appendix D of No. 181 I. of 28th Feb. 1892 and No. 962 I. of 14th Nov. 1885.	(4) C.	..	Masonry works	6,717	..	6,717	6,717	..	..	Lump sum.
434	Do. do. ..	(4) L.	..	Earthwork	4,469	..	4,469	4,469	..	..	Do.
435	Do. do. ..	(4) O.	..	Miscellaneous works	261	..	261	261	..	..	
				Total, Uppalur drain ..	11,447	..	11,447	11,447	..	..	
				Chendraya drain.							
436	No. $\frac{369}{A}$ I. of 4th May 1883 ..	(4) O.	..	Bench marks	1,150	..	1,150	1,150	..	..	
437	Appendix D of No. 181 I. of 28th Feb. 1882.	..	..	Other masonry works	1,969	..	1,969	1,969	..	..	
438	No. 536 I. of 16th July 1891 ..	..	..	Demarcation stones	1,740	141	1,599	1,740	..	..	
				Total ..	4,859	141	4,718	4,859	..	..	
				Total, Chendraya drain ..	4,859	141	4,718	4,859	..	..	
				Polraz drain.							
439	No. 493 I. of 25th May 1892 ..	(4) C.	..	Rolled iron girder bridge across Polraz drain for Bantumilli-Gudivada road at Mudanapalli.	7,400	2,785	4,615	7,400	..	..	
440	* Appendix D of G.O. No. 181 I. of 28th Feb. 1882.	..	..	Masonry works	14,128	..	14,128	14,128	..	..	Lump sum.
				Total ..	21,528	2,785	18,743	21,528		..	
441	* No. 962 I., of 14th Nov. 1885 ..	(4) L.	..	Earthwork	13,709	..	13,709	13,709	..	..	Lump sum.
442	Appendix D of No. 181 I. of 28th Feb. 1882.	(4) O.	..	Demarcation stones	190	..	190	190	..	..	
				Total, Polraz drain ..	35,427	2,785	32,642	35,427	..	..	
				Pullava drain.							
443	No. 128 I. of 5th Feb. 1884 ..	(4) C.	..	Outlet sluices	2,505	..	2,505	2,505	..	..	
444	Superintending Engineer's No. 2953 K.S. of 7th Mar. 1892.	(4) O.	..	Demarcation stones along Veduruva affluent ..	65	..	65	65	..	..	
445	Do. do. ..	..	..	Do. Annava affluent	80	..	80	80	..	..	
446	Do. do. ..	..	..	Do. Pullava drain	140	..	140	140	..	..	
447	Superintending Engineer's No. 962 K.S. of 22nd July 1889.	..	..	(6) Cattle crossing along Pullava main drain	719	320	399	719	..	..	
448	Do. do. ..	..	..	(4) Do. Veduruva affluent	277	..	277	277	..	..	
449	Do. do. ..	..	..	(4) Do. Annava do.	295	110	185	295	..	..	
				Total ..	1,576	430	1,146	1,576	..	..	
				Total, Pullava drain ..	4,081	430	3,651	4,081	..	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Dammidi drain.							
450	No. 128 I. of 5th Feb. 1884 ..	(4) C.	..	Outlet sluices	1,865	..	1,865	1,865	..	..	
451	Superintending Engineer's No. 2953 K.S. of 7 Mar. 1893.	(4) O.	..	Demarcation stones	95	..	95	95	..	..	
				Total, Dammidi drain ..	1,960	..	1,960	1,960	..	..	
				Peddakommileru drain.							
452	No. 128 I. of 5th Feb. 1884 ..	(4) C.	..	Road dam	190	..	190	190	..	..	
453	Do. do. ..	..	..	Do.	360	..	360	360	..	..	
				Total ..	550	..	550	550	..	..	
454	Superintending Engineer's No. 2953 K.S. of 7th Mar. 1893.	(4) O.	..	Demarcation stones along Chinnakommileru drain ..	100	..	100	100	..	..	
				Total, Peddakommileru drain ..	650	..	650	650	..	..	
				Pedalanka drain.							
455	No. 546 I. of 18th June 1892 ..	(4) B.	..	Pedalanka main drain	1,000	43	957	1,000	..	..	
456	Do. do. ..	..	..	Utukur affluent	150	..	150	150	..	..	
457	Do. do. ..	..	..	Kondangi affluent	200	..	200	200	..	..	
458	Do. do. ..	..	..	Pedatummidi affluent	260	..	260	260	..	..	
459	Do. do. ..	..	..	Amadalapalli do.	200	50	150	200	..	..	
460	Do. do. ..	..	..	Kaldindicodu, now converted into a drain	2,150	..	2,150	2,150	..	..	
				Total ..	3,960	93	3,867	3,960	..	..	
461	No. 1005 I. of 28th Nov. 1892 ..	(4) C.	..	Bridge on Bantumilli road across Kaldindicodu drain ..	7,200	..	7,200	7,200	..	..	
462	No. 546 I. of 18th June 1892 and No. 128 I. of 5th Feb. 1884.	(4) L.	..	Pedalanka main drain	56,260	53,934	2,326	56,260	..	..	
463	....	..	..	Utukur affluent	1,310	..	1,310	1,310	..	..	
464	Do. do. ..	..	..	Kondangi affluent	1,530	..	1,530	1,530	..	..	
465	Do. do. ..	..	..	Pedatummidi do.	2,030	22	2,008	2,030	..	..	
466	Do. do. ..	..	..	Amadalapalli do.	1,790	8	1,782	1,790	..	..	
467	* Do. do. ..	..	..	Kaldindicodu, now converted into a drain	55,787	2,536	53,251	55,787	..	..	
468	....	..	..	Pedatummidi affluent	..	..	5,000	5,000	5,000	..	

469	...	..	..	Widening Pedalanka drain from Korukollu to the Upputeru.	..	..	40,000	40,000	40,000	..	
				Total ..	1,18,707	56,500	1,07,207	1,63,707	45,000	..	
470	No. 546 I. of 18th June 1892 ..	(4) O.	..	Cattle ramps along main drain	415	..	415	415	..	..	
471	Do. do. ..	..	..	Do. do.	1,000	..	1,000	1,000	..	..	
472	Do. do. ..	..	..	Bench mark stones for do.	160	32	128	160	..	..	
473	Do. do. ..	..	..	Do. Kaldindi drain	210	..	210	210	..	..	
474	Do. do. ..	..	..	Do. Utukur affluent	77	..	77	77	..	..	
475	Do. do. ..	..	..	Do. Kondangi do.	68	..	68	68	..	..	
476	Do. do. ..	..	..	Do. Pedatummidi affluent	104	..	104	104	..	..	
477	Do. do. ..	..	..	Do. Amudalapalli do.	99	..	99	99	..	..	
478	No. 1441 W. of 31st May 1893 ..	..	..	Flags and pegs for surveying the drain	12	..	12	12	..	..	
				Total ..	2,145	32	2,113	2,145	..	..	
				Total, Pedalanka drain ..	1,32,012	56,625	1,20,387	1,77,012	45,000	..	
				Lazabanda drain.							
479	No. 179 I. of 26th Feb. 1883 ..	(4) B.	..	Isakaparru affluent	945	265	680	945	..	..	
480	Do. do. ..	..	..	Compensation for land	1,990	..	1,990	1,990	..	..	Lump sum.
481	No. 3169 K.S. of 22nd Mar. 1893.	..	..	Dokiparru affluent	140	..	140	140	..	..	
482	No. 3228 K.S. of 27th June 1893.	..	..	Venturumalli do.	465	..	465	465	..	..	
				Total ..	3,540	265	3,275	3,540	..	..	
483	No. 179 I. of 26th Feb. 1883 ..	(4) C.	..	Masonry works	17,412	..	17,412	17,412	..	..	Lump sum.
484	No. 3169 K.S. of 22nd Mar. 1893.	(4) L.	..	Dokiparru affluent	210	..	210	210	..	..	
485	No. 3228 K.S. of 27th Mar. 1893.	..	..	Venuturumalli affluent	1,179	..	1,179	1,179	..	..	
486	No. 179 I. of 26th Feb. 1883 ..	(4) L.	..	Improvements	59,559	..	59,559	59,559	..	..	
				Total ..	60,948	..	60,948	60,948	..	..	
487	Do. do. ..	(4) O.	..	Cattle-crossing	5,576	..	5,576	5,576	..	..	Lump sum.
				Total, Lazabanda drain ..	87,476	265	87,211	87,476	..	..	
				Sultanagaram drain.							
488	Appendix D. of No. 181 I. of 28th Feb. 1892.	(4) B.	..	Compensation for land	412	..	412	412	..	..	Lump sum.
489	Do. do. ..	(4) L.	..	Earthwork	2,415	..	2,415	2,415	..	..	Do.
				Total, Sultanagaram drain ..	2,827	..	2,827	2,827	..	..	
				Kanakavalli drain.							
490	Superintending Engineer's No. 3089 K.S. of 10th Mar. 1891.	(4) B.	..	Compensation for land	2,720	1,844	876	2,720	..	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA EASTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Kanakavalli drain—cont.							
491	Superintending Engineer's No. 3089 K.S. of 10th Mar. 1891.	..	..	Raising bund on the land side	670	..	670	670	..	..	
492	No. 7676 I. of 2nd Sept. 1893 ..	..	..	Compensation for widening and improving	273	..	273	273	..	..	
				Total ..	3,663	1,844	1,819	3,663	..	..	
493	Do. do. ..	(4) C.	..	Building dry stone inlets	1,150	977	173	1,150	..	..	
494	No. 767 I. of 2nd Sept. 1893 ..	..	..	Demolishing and reconstructing Inampudi bridge ..	400	..	400	400	..	..	
495	Do. do. ..	..	..	Improving the drop wall of Inampudi aqueduct ..	30	..	30	30	..	..	
				Total ..	1,580	977	603	1,580	..	..	
496	Do. do. ..	(4) L.	..	Widening and improving	4,400	..	4,400	4,400	..	..	
497	No. 141 I. of 16th Mar. 1889 ..	(4) O.	..	Demarcation stones	1,057	..	1,057	1,057	..	..	
498	No. 767 I. of 2nd Sept. 1893 ..	..	..	Do	197	..	197	197	..	..	
				Total ..	1,254	..	1,254	1,254	..	..	
				Total, Kanakavalli drain ..	10,897	2,821	8,076	10,897	..	..	
				Gúdúr swamp.							
499	Appendix D. of 181 I. of 28th Feb. 1892.	(4). B.	..	Compensation for land	375	..	375	375	..	..	Lump sum.
500	Do. do. ..	(4) C.	..	Masonry works	1,500	..	1,500	1,500	..	..	Do.
501	Do. do. ..	(4) L.	..	Earthwork	5,625	..	5,625	5,625	..	..	
				Total, Gúdúr swamp ..	7,500	..	7,500	7,500	..	..	
				Ellamalli drain.							
502	No. 2953 K.S. of 7th Mar. 1892.	(4) O.	..	Demarcation stones	20	..	20	20	..	..	
				Total, Kistna Eastern section ..	9,98,223	2,93,459	8,32,913	11,26,372	1,28,149	..	

			M.FUR.FT.							
				KISTNA WESTERN SECTION. *Main canal.*						
503	* No. 992 I. of 4th Nov. 1884 and No. 423 I. of 10th May 1893.	(2) L.	..	Widening main canal	5,65,657	4,30,119	1,35,538	5,65,657	..	..
504	Superintending Engineer's No. 315 K.S. of 6th May 1892.	..	..	Tramway and wharf wall from left wing wall of Sithanagaram head sluice.	2,100	453	1,647	2,100	..	..
				Total ..	5,67,757	4,30,572	1,37,185	5,67,757	..	..
505	No. 992 I. of 4th Nov. 1884 ..	(2) O.	..	Concrete block	364	..	364	364	..	..
506	No. 247 I. of 22nd Mar. 1893 ..	..	..	Retaining wall round the island separating the head lock at Sithanagaram from the head sluice.	3,100	..	3,100	3,100	..	..
				Total ..	3,464	..	3,464	3,464	..	..
				Total (2) Main canals and branches ..	5,71,221	4,30,572	1,40,649	5,71,221	..	..
507	Superintending Engineer's No. 2764 K.S. of 13th Feb. 1893.	(3) C.	..	Head sluice to Imani branch channel	810	..	810	810	..	..
				Total (3) Distributaries ..	810	..	810	810	..	..
				Total, Main canal ..	5,72,031	4,30,572	1,41,459	5,72,031	..	..
				Nizampatam canal.						
508	No. 834 I. of 23rd Sept. 1885 ..	(2) G.	..	Bridge on Tsandole road	8,390	..	8,390	8,390	..	..
509	....	..	..	Do. at Turumella	..	..	9,000	9,000	9,000	..
				Total ..	8,390	..	17,390	17,390	9,000	..
510	....	(2) I.	..	Permanent sheds for lock establishment	..	..	6,600	6,600	6,600	..
511	* Para. 9 of the note printed in No. 3573 of 19th Dec. 1874 ..	(2) L.	..	Improvements to the canal	10,645	..	10,645	10,645	..	..
				Total (2) Main canals and branches ..	19,035	..	34,635	34,635	15,600	..
512	No. 404 I. of 5th May 1893 ..	(3) B.	..	Compensation for land for west side channel extension ..	1,400	..	1,400	1,400	..	..
513	Do. do. ..	..	..	Do. do. branch channel	400	..	400	400	..	..
				Total ..	1,800	..	1,800	1,800	..	..
514	No. 679 I. of 29th Aug. 1892 and No. 220 I. of 4th March 1885.	(3) C.	..	East side channel, head sluice improvements	3,554	2,480	1,074	3,554	..	..
515	Para. 10 of the note printed in No. 3573 of 19th Dec. 1874 and No. 834 I. of 23rd Sept. 1885.	..	..	Bridge across west side channel, Tsandole road ..	1,305	..	1,305	1,305	..	..
516	Do. do.	..	..	Do east do. do. ..	1,750	..	1,750	1,750	..	..
				West side channel extension—						
517	No. 404 I. of 5th May 1893 ..	..	0-3-185	Aqueduct	4,440	..	4,440	4,440	..	..
518	....	..	..	Drop	670	..	670	670	..	..
519	....	..	3-6-350	West side branch channel, head sluice	440	..	440	440	..	..

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA WESTERN SECTION—*cont.* *Nizampatam canal*—cont.	RS.	RS.	RS.	RS.	RS.	RS.	
520	Para. 10 of the note printed in No. 3573 of 19th Dec. 1874, and S. E's. No. 784 K.S. of 5th July 1891.	..	..	Minor masonry sluices in the 1st reach of west side channel	1,680	15	5,665	5,680	4,000	..	Lump sum.
521	....	..	..	Masonry works on west side channel	..	..	6,000	6,000	6,000	..	
522	....	..	..	Do. on east do.	..	..	6,000	6,000	6,000	..	
523	....	..	..	Minor masonry sluices on east side channel	..	..	10,000	10,000	10,000	..	
				Total ..	13,839	2,495	37,344	39,839	26,000	..	
524	Para. 10 of the note printed in No. 3573 of 19th Dec. 1874 and G.O. No. 404 I. of 5th May 1893.	(3) L.	..	West side channel extension	3,340	..	3,340	3,340	..	..	
525	Do. do.	..	..	Do. branch channel	1,540	..	1,540	1,540	..	..	
526	....	..	..	Improvements to east side channel	..	..	15,000	15,000	15,000	..	
527	....	..	..	Do. west do.	..	..	15,000	15,000	15,000	..	
				Total ..	4,880	..	34,880	34,880	30,000	..	
528	Para. 10 of the note printed in No. 3573 of 19th Dec. 1874 and G.O. No. 404 I. of 5th May 1893.	(3) O.	..	West side channel extension demarcation stones ..	330	..	330	330	..	..	
529	....	..	..	Do. branch channel	140	..	140	140	..	..	
				Total ..	470	..	470	470	..	..	
				Total (3) Distributaries ..	20,989	2,495	74,494	76,989	56,000	..	
				Total, Nizampatam canal ..	40,024	2,495	1,09,129	1,11,624	71,600	..	
				Bank canal.							
530	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	(2) D.	..	Head sluice improvements	3,390	..	3,390	3,390	..	..	
531	Do. do.	(2) F.	..	Inlets near Vallabhapuram	7,275	..	7,275	7,275	..	..	

532	G.O., No. 358 I. of 22nd April 1893.	(2) F (1)	33 5¼	Syphon sluice	3,320	..	3,320	3,320	..	..
533	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	(2) H.	..	Kollipara surplus weir channel	2,865	..	2,865	2,865	..	..
534	E. I's. No. 105 K.S. of 6th Nov. 1888 and No. 528 I. of 13th June 1892.	(2) I.	..	Head lock improvements	500	..	500	500	..	..
535	* Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	..	..	Tidal lock	26,620	..	26,620	26,620	..	..
536	No. 360 I. of 24th April 1893 ..	..	..	Do. weir at Adivipalem	8,700	2,283	6,417	8,700	..	..
537	....	..	..	Permanent sheds for lock establishment	..	..	7,440	7,440	7,440	..
				Total ..	35,820	2,283	40,977	43,260	7,440	..
					1,13,715	66,039	47,676	1,13,715	..	..
538	* No. 283 I. of 12th May 1888 ..	(2) L.	..	Bank canal improvements						
539	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874 and E. I's. Memo. No. 28 K.S. of 7th Feb. 1889.	(2) O.	..	Ramps	970	..	970	970	..	..
540	Do. do. ..	..	..	Eight cattle crossings	8,780	3,150	5,630	8,780	..	..
541	Superintending Engineer's No. 2817 K.S. of 9th Feb. 1891.	..	..	Fixing demarcation stones on both sides of Bank canal ..	2,200	1,029	1,171	2,200	..	..
542	....	..	..	Eight additional cattle crossings	..	..	6,250	6,250	6,250	..
				Total ..	11,950	4,179	14,021	18,200	6,250	..
				Total (2) Main canals and branches ..	1,78,335	72,501	1,19,524	1,92,025	13,690	..
543	Superintending Engineer's No. 1495 K.S. of 15th Sept. 1892.	(3) A.	..	Granite bench mark stones at south end of north and south lines of Vellatur block under Vellatur channel.	250	37	213	250	..	..
544	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	(3) B.	..	Kollur channel	940	..	940	940	..	..
545	Do. do. ..	..	..	Vellatur channel	870	..	870	870	..	..
546	Do. do. ..	..	..	Isukapalli channel	585	..	585	585	..	..
547	Do. do. ..	..	..	Aravapalli channel	505	..	505	5'5	..	..
548	Do. do. ..	..	..	Ullipalem do	715	..	715	715	..	..
549	Do. do. ..	..	..	Allaparru do.	715	..	715	715	..	..
550	Do. do. ..	..	..	Kuchinapadi channel	595	..	595	595	..	..
551	Do. and No. 227 I. of 9th March 1891.	..	..	Potameraka do.	1,070	..	1,070	1,070	..	..
552	Do. do. ..	..	..	Tsodayapalem branch	190	..	190	190	..	..
553	No. 537 I. of 6th June 1884 ..	..	..	Kuchanapudi north channel	129	23	106	129	..	..
554	Do. do. ..	..	..	Do. channel extension	100	27	73	100	..	..
555	Do. do. ..	..	..	Edupalli channel	124	26	98	124	..	..
				Total ..	6,538	76	6,462	6,538	..	..
556	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	(3) C.	..	Kollipara channel	705	..	705	705	..	..
557	Do. do. ..	..	..	Kollur side channel	640	..	640	640	..	..

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA WESTERN SECTION—*cont.* *Bank canal.*	RS.	RS.	RS.	RS.	RS.	RS.	
558	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	..	..	Kollur channel ..	1,920	..	1,920	1,920	..	..	
559	Do. do. ..	..	..	Vellatur channel ..	1,600	..	1,600	1,600	..	..	
560	Do. do. ..	..	..	Do. side channel ..	450	..	450	450	..	..	
561	Do. do. ..	..	..	Vemavaram do. ..	700	..	700	700	..	..	
562	Do. do. ..	..	..	Jagajjeru channel ..	990	..	990	990	..	..	
563	Do. and Superintending Engineer's No. 2917 K.S. of 2nd May 1892.	..	..	Aravapalli do. ..	440	335	105	440	..	..	
564	Do. do. ..	..	..	Ullipalem do. ..	3,030	391	2,639	3,030	..	..	
565	Do. do. ..	..	..	Allaparru do. ..	3,815	584	3,231	3,815	..	..	
566	Do. do. ..	..	..	Kuchinapudi do. ..	3,415	514	2,901	3,415	..	..	
567	No. 227 I. of 9th March 1891 ..	..	1 7	Nallur channel ..	270	102	168	270	..	..	
568	Do. do. ..	..	..	Do. drop 100 feet below ..	260	99	161	260	..	..	
569	No. 537 I. of 6th June 1884 ..	..	..	Minor channels ..	13,534	..	13,534	13,534	..	..	Lump sum.
				Total ..	31,769	2,025	29,744	31,769	..	..	
570	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874.	(3) L.	..	Kollur channel ..	6,370	..	6,370	6,370	..	..	
571	Do. do. ..	..	..	Vellatur channel ..	16,720	..	16,720	16,720	..	..	
572	Do. do. ..	..	..	Jagajjeru do. ..	2,110	..	2,110	2,110	..	..	
573	Do. do. ..	..	..	Isukapalli do. ..	19,330	734	18,596	19,330	..	..	
574	Do. do. ..	..	..	Aravapalli do. ..	2,465	..	2,465	2,465	..	..	
575	Do. do. ..	..	..	Ullipalem do. ..	3,430	..	3,430	3,430	..	..	
576	Do. do. ..	..	..	Allaparru do. ..	2,720	..	2,720	2,720	..	..	
577	Do. do. ..	..	..	Kuchinapudi channel ..	2,635	..	2,635	2,635	..	..	
578	Do. and No. 246 I. of 13th Mar. 1891 and No. 733 I. of 21st Sept. 1891.	..	..	Nallur channel ..	1,400	1,023	377	1,400	..	..	
579	Do. do. ..	..	..	Do. No. 1 branch ..	1,010	..	1,010	1,010	..	..	
580	Do. do. ..	..	..	Do. No. 2 do. ..	290	..	290	290	..	..	
581	Para. 15 of the note printed in No. 3573 of 19th Dec. 1874 and No. 227 I. of 9th Mar. 1891.	..	..	Potumeraka channel ..	4,120	2,159	1,961	4,120	..	..	
582	No. 537 I. of 6th June 1884 ..	..	..	Minor channels ..	9,862	..	9,862	9,862	..	..	Lump sum.
				Total ..	72,462	3,916	68,546	72,462	..	..	

583	No. 246 I. of 13th Mar. 1891 ..	(3) O.	..	Nallur channel demarcation stones	160	32	128	160	..	..
584	Do. do. ..	..	..	Do. No. 2 branch do.	50	9	41	50	..	..
				Total ..	210	41	169	210	..	..
				Total (3) Distributaries ..	1,11,229	6,095	105,134	1,11,229	..	..
				Total, Bank canal ..	2,89,564	78,596	224,658	3,03,254	13,690	..
				Commamur canal.						
585	No. 124 I. of 9th Feb. 1885 ..	(2) B.	..	Ist, 2nd and 3rd reaches	12,428	13,931	2,137	16,068	..	..
586	....	..	..	New cut from the Guntúr nallah to the culvert ..	875					
587	....	..	..	Vejendla quarries	975					
588	....	..	..	Apperu outfall channel	170					
589	....	..	..	Stop bank between Alleru and Apperu	720					
590	....	..	..	Emiloru diversion bank	900					
				Total ..	16,068	13,931	2,137	16,068	..	..
591	* No. 797 I. of 9th Oct. 1882 ..	(2) F.	23 20	Nakkavagu aqueduct	22,570	..	22,570	22,570	..	..
592	....	..	..	Surplus vents to Kollimerla aqueduct	..	..	2,000	2,000	2,000	..
593	*	..	..	Kollimerla new aqueduct	..	..	50,000	50,000	50,000	..
594	*	..	..	Pondrapad aqueduct	..	..	25,000	25,000	25,000	..
595	....	..	..	Widening Alleru surplus sluices	..	..	5,720	5,720	5,720	..
596	No. 797 I. of 9th Oct. 1882 ..	..	49 39	Apperu inlet	380	..	380	380	..	..
597	No. 429 I. of 4th May 1892 ..	..	..	Inlet and outlet below Inkollu bridge	3,060	2,178	882	3,050	..	..
				Total ..	26,010	2,178	1,06,552	1,08,730	82,720	..
598	Superintending Engineer's No. 2949 K.S. of 7th Mar. 1892.	(2) F. (1)	..	Constructing stone drain in left bank of Commamur canal $\frac{17}{0}$ and $\frac{17}{1}$.	510	156	354	510	..	..
599	No. 406 I. of 5th May 1893 ..	(2) I.	19 4	Reconstructing and extending revetment in rear of Kollimerla weir.	2,600	..	2,600	2,600	..	..
600	*	(2) I.	..	Permanent sheds for lock establishment	..	..	15,960	15,960	15,960	..
601	....	..	..	Santa ravur wharf	..	..	5,870	5,870	5,870	..
				Total ..	2,600	..	24,430	24,430	21,830	..
602	No. 797 I. of 9th Oct. 1882 ..	(2) L.	11 0 to 8 30	Improvements to 1st reach	68,379	..	..	..	..	..
603	....	..	8 30 to 18 70	Do. 2nd do.	60,252	..	..	..	..	..
604	....	..	18 70 to 30 58	Do. 3rd do.	41,529	..	..	..	..	..
605	....	..	30 58 to 46 30	Do. 4th do.	32,210	..	..	..	..	..
606	....	..	46 30 to 55 30	Do. 5th do.	46,656	..	..	..	..	..
607	....	..	..	Cost of original line from Firangidibba to Romperu ..	18,202	..	..	..	..	..
608	....	..	..	Petty supervision at 3 per cent.	8,017	..	..	..	..	..

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Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA WESTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Commamur canal—cont.							
609	....	..	..	Contingencies	5,345	..	..	..	..	..	
610	No. 359 I. of 24th April 1893	..	27/1 to 27/6	Constructing revetment to left slope	2,80,590 5,500	2,34,235 ..	11,095 5,500	2,45,330 5,500	.. ..	35,260 ..	Balance Rs. 35,260 not required and surrendered.
				Total	2,86,090	2,34,235	16,595	2,50,830	..	35,260	
				Total (2) Main canals and branches	3,31,278	2,50,500	1,50,068	4,00,568	1,04,550	35,260	
611	No. 797 I. of 9th Oct. 1882	(3) B.	7 50	Left bank Tungabhadra side channel	2,470	1,940	530	2,470	..	..	
612	Do. do.	..	23 10	Pundla channel	1,600	..	1,600	1,600	..	..	
613	No. 612 I. of 12th July 1893	(3) B.	29 17	Bapatla channel	500	32	468	500	..	..	
614	Do. do.	..	..	Do. first east branch	600	..	600	600	..	..	
615	Do. do.	..	..	Do. first west ,,	700	..	700	700	..	..	
616	Do. do.	..	..	Cherukur channel	230	..	230	230	..	..	
				Total	6,100	1,972	4,128	6,100	..	..	
617	No. 343 I. of 24th Sept. 1887	(3) C.	7 50	Tungabhadra side channel, head sluice	1,360	6	1,354	1,360	..	..	
618	Do. do.	..	..	Do. bridge at Tenali road and elsewhere	9,150	..	9,150	9,150	..	..	
619	Do. do.	..	..	Do. Aremanda sluice	550	..	550	550	..	..	
620	....	..	..	Do. aqueduct	..	..	5,000	5,000	5,000	..	Lump sum.
621	....	..	..	Do. Alanala sluice	..	..	1,500	1,500	1,500	..	Do.
622	No. 343 I. of 24th Sept. 1887	..	..	Do. minor channels	2,000	..	2,000	2,000	..	..	Lump sum.
623	No. 520 I. of 13th June 1885	..	..	Yedlapalli channel, Tail escape	109	24	85	109	..	..	
624	No. 343 I. of 24th Sept. 1887	..	8 30	Chebrole do. head sluice	630	..	630	630	..	..	
625	Do. do.	..	..	Do. minor channel and sluices	150	..	150	150	..	..	
626	Do. do.	..	13 30	Mannava channel, head sluice	400	..	400	400	..	..	
627	Do. do.	..	..	Do. tail escape weir	380	..	380	380	..	..	
628	Do. do.	..	..	Do. minor channels	200	..	200	200	..	..	
629	Do. do.	..	21 10	Commamur tank supply channel, minor channels	900	..	900	900	..	..	
630	Do. do.	..	23 10	Pundla channel, head sluice	2,040	..	2,040	2,040	..	..	
631	Do. do.	..	..	Appicatla channel do.	500	..	500	500	..	..	
632	Do. do.	..	..	Ravanappa do. do.	500	..	500	500	..	..	
633	Do. do.	..	..	Tail escape weir	530	..	530	530	..	..	
634	Do. do.	..	..	Minor channels	800	..	800	800	..	..	
635	Do. do.	..	23 70	Retur side channel head sluice	690	..	690	690	..	..	
636	....	..	..	Minor channels	200	..	200	200	..	..	Lump sum.

					Bapatla channel.							
637	No. 612 I. of 12th July 1893	(3) C.	29	17	Dividing sluice for first east and west branches	2,950	..	2,950	2,950	..	..	
638	Do. do.	..		..	Head sluice to Kunkatapalem branch	1,330	..	1,330	1,330	..	..	
639	Do. do.	..		..	Do. to Mulapalem do.	1,790	..	1,790	1,790	..	..	
640	Do. do.	..		..	Do. to Cherukur channel	760	..	760	760	..	..	
641	Do. do.	..		..	Bapatla first west branch, tail escape weir	440	..	440	440	..	..	
642	Do. do.	..		..	Drop at 2/5 mile and 410 feet of Mulapalem	720	..	720	720	..	..	
643	Do. do.	..		..	No. 1 sluice at 9/2 mile of Kunkatapalem branch	360	..	360	360	..	..	
644	Do. do.	..		..	„ 2 do. at 6 mile of do. do.	590	..	590	590	..	..	
645	Do. do.	..		..	„ 3 do. at 1—4½ mile of do. do.	620	..	620	620	..	..	
646	Do. do.	..		..	„ 1 do. at 0—1 mile and 66 feet of Mulapalem branch.	560	..	560	560	..	..	
647	Do. do.	..		..	„ 2 do. at 1—1 „ and 396 „ of do. do.	590	..	590	590	..	..	
648	Do. do.	..		..	„ 3 do. at 2—0 „ and 396 „ of do. do.	620	..	620	620	..	..	
649	Do. do.	..		..	„ 4 do. at 2—5 „ and 396 „ of do. do.	650	..	650	650	..	..	
					Total ..	38,069	80	39,539	39,569	6,500	..	
650	No. 797 I. of 9th Oct. 1882	(3) L.	7	50	Tungabadra side channel	8,660	..	8,660	8,660	..	..	Lump sum.
651	Do. do.	..			Do. minor do.	4,100	..	4,100	4,100	..	..	Do.
652	No. 520 I. of 13th June 1885	..	8	30	Chebrole do. channels	300	..	300	300	..	..	Do.
653	No. 797 I. of 9th Oct. 1882	..	13	30	Mannava channel	600	..	600	600	..	..	Do.
654	Do. do.	..	21	20	Commamur tank supply channel	1,800	..	1,800	1,800	..	..	Do.
655	Do. do.	..	23	10	Pundla channel	7,450	..	7,450	7,450	..	..	Do.
656	Do. do.	..			Do. minor channels	1,700	..	1,700	1,700	..	..	
657	Do. do.	..	23	70	Retar channel minor channels	500	..	500	500	..	..	
658	No. 612 I. of 12th July 1893	..	27	17	Bapatla channel from head to 5 furlongs 1,960 feet	1,960	..	1,960	1,960	..	..	
659	Do. do.	..		..	Do. from 0–5 to 2 miles and 250 feet	1,630	..	1,630	1,630	..	..	
660	Do. do.	..		..	Bapatla minor channels	6,000	..	6,000	6,000	..	..	
661	Do. do.	..		..	Do. 1st east branch	2,880	..	2,880	2,880	..	..	
662	Do. do.	..		..	Do. 1st west do.	2,860	..	2,860	2,860	..	..	
663	Do. do.	..		..	Do. Mulapalem branch	5,080	..	5,080	5,080	..	..	
664	Do. do.	..		..	Do. Kunkatapalem branch	3,140	..	3,140	3,140	..	..	
665	Do. do.	..		..	Do. Cherukur channel	150	..	150	150	..	..	
					Total ..	48,880	..	48,810	48,810		..	
666	No. 797 I. of 9th Oct. 1882	(3) O.		..	Tungabhadra side channel, seven cattle crossings	2,000	..	7,000	7,000	5,000	..	Lump sum.
					Bapatla channel, Kunkatapalem branch—							
667	No. 612 I. of 12th July 1893	..		..	No. 1 cattle crossing at 5⅓ furlongs	550	..	550	550	..	..	
668	Do. do.	..		..	„ 2 do. at 1 mile ¼ furlong	480	..	480	480	..	..	
669	Do. do.	..		..	„ 3 do. at 1 „ 4 furlongs	520	..	520	520	..	..	
670	Do. do.	..		..	„ 4 do. at 2 miles 4⅓ furlongs	540	..	540	540	..	..	
					Bapatla channel, Mulapalem branch—							
671	Do. do.	..		..	No. 1 cattle crossing at 2 miles 6 furlongs	910	..	910	910	..	..	
672	Do. do.	..		..	„ 2 do. at 4 „ ½ furlong	960	..	960	960	..	..	
673	Do. do.	..		..	„ 3 do. at 4 „ 5 furlongs	1,010	..	1,010	1,010	..	..	
674	Do. do.	..		..	Demarcation stones for Bapatla channel	170	..	170	170	..	..	
675	Do. do.	..		..	Do. for Mulapalem branch	270	..	270	270	..	..	
676	Do. do.	..		..	Do. for Kunkatapalem branch	330	..	330	330	..	..	
					Total ..	7,740	..	12,740	12,740	5,000	..	
					Total (3) Distributaries ..	95,719	2,002	1,05,217	1,07,219	11,500	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure: Expenditure incurred to end of 1892–93.	Expenditure: Further expenditure.	Expenditure: Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA WESTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Guntúr nallah.							
677	Superintending Engineer's No. 118 K.S. of 12th April 1890.	(4) C.	..	Compensation for land	144	78	66	144	..	..	
678	Superintending Engineer's No. 3061 K.S. of 11th March 1893.	(4) L.	..	Cutting approach of Nakkavagu straight to the aqueduct.	760	..	760	760	..	..	
				Total, Guntúr nallah ..	904	78	826	904	..	..	
				Total, Commamur canal ..	4,27,901	2,52,580	2,56,111	5,08,691	1,16,050	35,260	
				Repalle drain.							
679	Superintending Engineer's No. 2422 K.S. of 31st Dec. 1890, and No. 1624 K.S. of 9th Oct. 1891, and No. 1058 I. of 15th Dec. 1892.	(4) A.	..	Establishment for surveying and levelling boundary mark stones.	330	..	330	330	..	..	
680	* No. 889 I. of 8th Nov. 1883 ..	(4) B.	..	Repalle drain	18,300	2,390	15,910	18,300	..	..	
681	Do. do. ..	..	..	Nandivelugu affluent	600	..	600	600	..	..	
682	Do. do. ..	..	..	Jaggadigunta do.	210	..	210	210	..	..	
683	Do. do. ..	(4) B.	..	Gunderu do.	960	..	960	960	..	..	
684	Do. do. ..	..	..	Nagaram do.	810	..	810	810	..	..	
				Total ..	20,880	2,390	18,490	20,880	..	..	
685	Do. do. ..	(4) C.	8 20	Bridge	7,430	..	7,430	7,430	..	..	
686	*	..	..	Do.	..	..	15,000	15,000	15,000	..	
				Total ..	7,430	..	22,430	22,430	15,000	..	
687	* No. 889 I. of 8th Nov. 1883 ..	(4) L.	..	Repalle drain	1,42,700	1,07,008	65,692	1,72,700	30,000	..	
688	Do. do. ..	..	..	Nandivelugu affluent	2,050	1	2,049	2,050	..	..	
689	Do. do. ..	..	..	Jaggadigunta do.	1,760	1	1,759	1,760	..	..	
690	Do. do. ..	..	..	Gunderu affluent	9,390	..	9,390	9,390	..	..	
691	Do. do. ..	..	..	Nagaram do.	4,826	..	4,826	4,826	..	..	
				Total ..	1,60,726	1,07,010	83,716	1,90,726	30,000	..	
				Total, Repalle drain ..	1,89,366	1,09,400	1,24,966	2,34,366	45,000	..	

				Bhattiprole drain.							
692	....	(4) B.	..	Bhattiprole drain	..	..	5,000	5,000	5,000	..	
693	* Appendix D printed in No. 181 I. of 28th Feb. 1882.	(4) L.	..	Earthwork	28,166	..	48,166	48,166	20,000	..	Lump sum.
694	Do. do. ..	(4) O.	..	Miscellaneous works	2,439	..	2,439	2,439	..	..	Do.
695	Superintending Engineer's No. 1495 K.S. of 15th Sept. 1892.	..	..	Granite bench mark stones along Gunderu-Bhattiprole drain.	170	25	145	170	..	..	
				Total ..	2,609	25	2,584	2,609	..	..	
				Total, Bhattiprole drain ..	30,775	25	55,750	55,775	25,000	..	
				Pedapalli drain.							
696	....	(4) C.	..	Aqueduct	..	..	5,000	5,000	5,000	..	
697	....	(4) L.	..	Earthwork	..	..	5,000	5,000	5,000	..	
				Total, Pedapalli drain ..	..	..	10,000	10,000	10,000	..	
				Nizampatam drain.							
698	No. 988 I. of 8th Nov. 1883 ..	(4) C.	..	Bridge at 4 miles	6,740	..	6,740	6,740	..	..	
699	Do. do. ..	(4) L.	..	Earthwork	6,801	..	6,801	6,801	..	..	
				Total, Nizampatam drain ..	13,541	..	13,541	13,541	..	..	
				Tungabhadra drain.							
700	Superintending Enginee's No. 2422 K.S. of 31st Dec. 1890.	(4) A.	..	Survey establishment for Tenali affluent	330	2	328	330	..	..	
701	No. $\frac{39}{A}$ I. of 16th Jan. 1884 and No. 447 I. of 9th May 1892.	(4) B.	..	Main drain	3,560	2,731	769	3,500	..	..	
702	* No. 447 I. of 9th May 1892 ..	..	..	Tenali affluent	12,150	..	12,150	12,150	..	..	
703	No. 499 I. of 27th Aug. 1888 ..	..	..	Nallamada affluent	3,000	2,228	772	3,000	..	..	
				Total ..	18,650	4,959	13,691	18,650	..	..	
704	* Appendix D printed in No. 181 I. of 28th Feb. 1882 and No. 447 I. of 9th May 1892.	(4) C.	..	Masonry works	62,175	..	1,80,000	1,80,000	1,17,825	..	Lump sum.
705	Do. do. ..	..	16 41	Rolled iron-girder bridge near Ponnur	11,600	2,443	9,157	11,600	..	..	
				Total ..	73,775	2,443	1,89,157	1,91,600	1,17,825	..	
706	* No. 99 I. of 2nd Feb. 1885 and No. 447 I. of 9th May 1892.	(4) L.	..	Excavating main drain	2,01,111	95,254	1,80,857	2,76,111	75,000	..	
707	* No. 449 I. of 27th Aug. 1888 ..	..	..	Nallamada affluent	1,32,065	92,712	59,353	1,52,065	20,000	..	
708	* No. 447 I. of 9th May 1892 ..	..	..	Tenali affluent	56,658	6,337	50,321	56,658	..	..	

Statement showing the principal items on which expenditure will have to be incurred after 31st March 1893 in completing Delta works, II Circle—*cont.*

No.	Proceedings of the Madras Government or other authority.	Main and sub head.	Mileage.	Names of works.	Amount of sanctioned estimate.	Expenditure. Expenditure incurred to end of 1892–93.	Expenditure. Further expenditure.	Expenditure. Total.	Increase.	Decrease.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			M. CH.	KISTNA WESTERN SECTION—*cont.*	RS.	RS.	RS.	RS.	RS.	RS.	
				Tungabhadra drain—cont.							
709	* No. 447 I. of 9th May 1892 ..	..	..	Kunderu affluent	13,751	..	13,751	13,751	..	..	
710	* Do. do. ..	..	..	Kollimerla affluent	1,25,185	..	1,25,185	1,25,185	..	..	
711	* Do. do. ..	..	..	Doppalapudi affluent	5,510	..	15,510	15,510	10,000	..	
712	* Do. do. ..	..	..	Pundla affluent	45,600	..	45,600	45,600	..	..	
				Total ..	5,79,880	1,94,303	4,90,577	6,84,880	1,05,000	..	
713	No. 99 I. of 2nd Feb. 1885 ..	(4) O.	..	Wooden gauges of main drain	420						
714	Do. and No. 447 I. of 9th May 1892.	..	..	Bench mark stones for do.	214						
715	No. 447 I. of 9th May 1892 ..	..	..	Furlong stones for main drain	300	1,060	2,329	3,389	..	..	
716	Do. do. ..	..	..	Mile stones for do.	150						
717	Do. do. ..	..	..	Four ramps for do.	2,000						
718	Do. do. ..	..	..	Demarcation stones for main drain	305						
719	Do. do. ..	(4) O.	..	Bench mark stones for Tenali affluent	2,892	81	2,811	2,892	..	..	
				Total ..	6,281	1,141	5,140	6,281	..	..	
				Total, Tungabhadra drain ..	6,78,916	2,02,848	6,98,893	9,01,741	2,22,825	..	
				Romperu drain.							
720	No. 286 I. of 3rd Sept. 1877 ..	(4) B.	..	Compensation for land	1,000	..	1,000	1,000	..	..	
721	Do. do. ..	..	..	Parachurvagu	500	..	500	500	..	..	
				Total ..	1,500	..	1,500	1,500	..	..	
722	*	(4) C.	..	Bridge	..	..	15,000	15,000	15,000	..	
723	* No. 286 I. of 3rd Sept. 1877, No. 15 I. of 10th Jan. 1877 and No. 377 I. of 12th August 1889.	(4) L.	..	Romperu drain	98,900	65,497	33,403	98,900	..	..	
724	* No. 286 I. of 3rd Sept. 1877 ..	..	..	Bapatla affluent	14,800	..	14,800	14,800	..	..	
725	* Do. do. ..	..	..	Parachurvagu	16,290	..	16,290	16,290	..	..	

726	Do. do. ..	..	..	Swerna affluent	4,400	..	4,400	4,400	..	..
727	* Do. do. ..	..	..	Alleru do.	10,870	..	10,870	10,870	..	..
728	*	..	..	Perali creek new cut	..	..	70,000	70,000	70,000	..
				Total ..	1,45,260	65,497	1,49,763	2,15,260	70,000	..
				Total, Romperu drain ..	1,46,760	65,497	1,66,263	2,31,760	85,000	..
				Koppalli drain.						
729	No. 39 I. of 14th Jan. 1893 ..	(4) B.	..	Compensation for land	1,540	..	1,540	1,540	..	..
730	Do. do. ..	(4) C.	..	Bridge at 40 feet	1,650	320	1,330	1,650	..	..
731	Do. do. ..	(4) L.	..	Excavation	1,910	..	1,910	1,910	..	..
				Total, Koppali drain ..	5,100	320	4,780	5,100	..	..
732	No. 859 W. of 29th Mar. 1893 ..	(4) A.	..	Clearing jungle in connection with survey operations of certain canals and drains	90	..	90	90	..	..
733	*		..	Ten inspection bungalows at Rs. 2,500 each	..	..	25,000	25,000	25,000	..
				Total, Kistna Western section ..	23,94,068	11,42,333	18,30,640	29,72,973	6,14,165	35,260
				Total, Kistna Delta system ..	33,92,291	14,35,792	26,63,553	40,99,345	7,42,314	35,260

Abstract of Statement II.

		RS.	RS.
Total amount provided for works (column 9 of statement II) ..	..	..	40,99,345
Outlay to end of 1892–93 (column 9 of statement I)	..	76,92,184	..
Deduct outlay incurred against current sanctions (column 7 of statement II)	..	14,35,792	62,56,392
Balance available for unforeseen works	..		3,75,257
Total, I works ..	..		1,07,30,994

(Signed) J. W. MARTIN,
Superintending Engineer, II Circle.

STATEMENT showing the amount of the Kistna Delta completion estimates by Main and Sub heads to correspond with the Statement No. II sent with this office letter, No. 1111 K.S. of the 30th July 1893.

Particulars.	(1) HEAD WORKS.					(2) MAIN CANALS AND BRANCHES.													
	2	3	4	5		1	2	3	5	6	7	8	9	11	12	15	16	
	Land.	Works.	Buildings.	Miscellaneous.	Total.	Preliminary expenses.	Land.	Regulators.	River and hill torrent works.	Other cross drainage works.	Bridges.	Escapes.	Navigation works.	Buildings.	Earthwork.	Miscellaneous.	Maintenance.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Old outlay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Outlay on completed works	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Head-works ..	..	6,500	..	1,025	7,525	..	..	..	..	..	..	..	..	..	..	..	..	..
Eastern Section.																		
Masulipatam canal	..	..	..	..	..	..	..	..	..	..	..	..	..	1,530	1,44,400	..	..	1,45,930
Pulleru do.	..	..	..	..	..	..	3,795	..	..	..	..	..	..	..	22,000	3,105	..	28,900
Pamarru junction canal	..	..	..	..	..	..	..	..	..	..	..	..	..	810	..	..	..	810
Polraz canal	..	..	..	..	..	..	..	..	..	..	..	..	..	330	..	300	..	630
Bantumilli do.	..	..	..	..	..	..	6,230	..	..	..	..	..	35,910	1,610	65,830	3,710	..	1,13,290
Ellore do.	..	..	..	..	..	..	30	..	190	..	..	..	12,185	..	..	436	..	12,841
Ryves do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bank do.	..	..	..	..	..	..	5,000	..	..	..	..	..	..	..	..	..	..	5,000
Kanakavalli drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Drain from Inampudi aqueduct to Dayyapu calva	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lazabanda drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uppulur do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sultanagaram drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gudur swamp	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chendraya drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Polraz do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pullana do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dammidi do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pedakommileru drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pedalanka do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ellamilli do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	..	..	..	..	..	..	15,055	..	190	..	..	..	48,095	4,280	2,32,230	7,551	..	3,07,401

Statement showing the amount of the Kistna Delta completion estimates by Main and Sub heads to correspond with the statement No. II, &c.—*cont.*

Particulars.	(3) DISTRIBUTARIES. 1 Preliminary ex-penses.	2 Land.	3 Works.	4 Earthwork.	5 Miscellaneous.	Total.	(4) DRAINAGE AND PROTECTIVE WORKS. 1 Preliminary ex-penses.	2 Land.	3 Works.	4 Earthwork.	5 Miscellaneous.	Total.	Total.
	20	21	22	23	24	25	26	27	28	29	30	31	32
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Old outlay	..	..	..	..	..	..	..	..	..	..	..	..	30,81,755
Outlay on completed works	..	..	..	..	..	..	..	..	..	..	..	..	31,74,637
Head works ..	..	..	..	..	..	..	..	..	..	..	..	..	7,525
Eastern Section.													
Masulipatam canal	..	7,870	16,760	28,790	1,500	54,920	..	..	..	..	..	..	2,00,850
Pulleru do.	..	15,147	46,583	79,714	4,054	1,45,498	..	..	..	..	..	..	1,74,398
Pamarru junction canal	..	..	..	..	..	..	..	..	..	..	..	..	810
Polraz canal	..	11,122	7,142	21,992	1,804	42,060	..	185	..	3,505	..	3,690	46,380
Bantumilli do.	..	5,261	14,247	15,811	752	36,071	..	..	..	..	..	..	1,49,361
Ellore do.	..	17,444	30,841	30,988	2,485	81,758	..	3,292	5,000	36,958	..	45,250	1,39,849
Ryves do.	..	11,175	10,038	24,986	6,134	52,333	..	..	..	..	..	..	52,333
Bank do.	..	..	..	..	..	..	..	..	..	..	..	..	5,000
Kanakavalli drain	..	..	..	..	..	..	..	3,663	1,580	4,400	1,254	10,897	10,897
Drain from Inampudi aqueduct to Dayyapu calva	..	..	..	..	..	..	..	5,710	..	..	..	5,710	5,710
Lazabanda drain	..	..	..	..	..	..	..	3,540	17,412	60,948	5,576	87,476	87,476
Uppulur do.	..	..	..	..	..	..	..	..	6,717	4,469	261	11,447	11,447
Sultanagaram drain	..	..	..	..	..	..	..	412	..	2,415	..	2,827	2,827
Gudur swamp	..	..	..	..	..	..	..	375	1,500	5,625	..	7,500	7,500
Chendraya drain	..	..	..	..	..	..	..	..	..	..	4,859	4,859	4,859
Polraz do.	..	..	..	..	..	..	..	..	21,528	13,709	190	35,427	35,427
Pullava do.	..	..	..	..	..	..	..	..	2,505	..	1,576	4,081	4,081
Danmidi do.	..	..	..	..	..	..	..	..	1,865	..	95	1,960	1,960
Pedakommileru drain	..	..	..	..	..	..	..	..	550	..	100	650	650
Pedelanka do.	..	..	..	..	..	..	..	3,960	7,200	1,63,707	2,145	1,77,012	1,77,012
Ellamilli do.	..	..	..	..	..	..	..	..	..	..	20	20	20
Total ..	..	68,019	1,25,611	2,02,281	16,729	4,12,640	..	21,137	65,857	2,95,736	16,076	3,98,806	11,18,847

Statement showing the amount of the Kistna Delta completion estimates by Main and Sub-heads to correspond with the statement No. II, &c.—*cont.*

Particulars.	(1) HEAD WORKS.					(2) MAIN CANALS AND BRANCHES.												
	2	3	4	5		1	2	3	5	6	7	8	9	11	12	15	16	
	Land.	Works.	Buildings.	Miscellaneous.	Total.	Preliminary expenses.	Land.	Regulators.	River and hill torrent works.	Other cross drainage works.	Bridges.	Escapes.	Navigation works.	Buildings.	Earthwork.	Miscellaneous.	Maintenance.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Western Section.																		
Main canal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,67,757	3,464	..	5,71,221
Nizampatam canal	..	..	..	..	..	..	..	..	..	..	17,390	..	6,600	..	10,645	..	..	34,635
Bank do.	..	..	..	..	..	..	..	3,390	7,275	3,320	..	2,865	43,260	..	1,13,715	18,200	..	1,92,025
Commamur do.	..	..	..	..	..	..	16,068	..	1,08,730	510	..	..	24,430	..	2,50,830	..	..	4,00,568
Repalle drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhattiprole drain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pedapalle do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Koppalle do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tungabhadra do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Romperu do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nizampatam do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Miscellaneous drains	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Inspection bungalows	..	..	..	..	..	..	..	..	..	..	..	..	..	25,000	..	..	..	25,000
Total ..	..	..	..	..	..	..	16,068	3,390	1,16,005	3,830	17,390	2,865	74,290	25,000	9,42,947	21,664	..	12,23,449
Grand Total, Western Delta ..	..	6,500	..	1,025	7,525	..	31,123	3,390	1,16,195	3,830	17,390	2,865	1,22,385	29,280	11,75,177	29,215	..	15,30,850
Unforeseen works	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total requirements for I Works ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total for I Works including old outlay ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Statement showing the amount of the Kistna Delta completion estimates by Main and Sub heads to correspond with the statement No. II, &c.—*cont.*

Particulars.	(3) DISTRIBUTARIES. 1 Preliminary expenses.	2 Land.	3 Works.	4 Earthwork.	5 Miscellaneous.	Total.	(4) DRAINAGE AND PROTECTIVE WORKS. 1 Preliminary expenses.	2 Land.	3 Works.	4 Earthwork.	5 Miscellaneous.	Total.	Total.
	20	21	22	23	24	25	26	27	28	29	30	31	32
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Western Section.													
Main canal	..	..	810	..	..	810	..	..	..	..	..	..	5,72,031
Nizampatam canal	..	1,800	39,839	34,880	470	76,989	..	..	..	..	..	..	1,11,624
Bank do.	250	6,538	31,769	72,462	210	1,11,229	..	..	..	..	..	..	3,03,254
Commamur do.	..	6,100	39,569	48,810	12,740	1,07,219	..	..	144	760	..	904	5,08,691
Repalle drain	..	..	..	..	..	..	330	20,880	22,430	1,90,726	..	2,34,366	2,34,366
Bhattiprole drain	..	..	..	..	..	..	..	5,000	..	48,166	2,609	55,775	55,775
Pedapalle do.	..	..	..	..	..	..	..	..	5,000	5,000	..	10,000	10,000
Koppalle do.	..	..	..	..	..	..	..	1,540	1,650	1,910	..	5,100	5,100
Tungabhadra do.	..	..	..	..	..	..	330	18,650	1,91,600	6,84,880	6,281	9,01,741	9,01,741
Romperu do.	..	..	..	..	..	..	..	1,500	15,000	2,15,260	..	2,31,760	2,31,760
Nizampatam do.	..	..	..	..	..	..	..	..	6,740	6,801	..	13,541	13,541
Miscellaneous drains	..	..	..	..	..	..	90	..	..	..	..	90	90
Inspection bungalows	..	..	..	..	..	..	..	..	..	..	..	..	25,000
Total	250	14,438	1,11,987	1,56,152	13,420	2,96,247	750	47,570	2,42,564	11,53,503	8,890	14,53,277	29,72,973
Grand Total, Western Delta	250	82,457	2,37,598	3,58,433	30,149	7,08,887	750	68,707	3,08,421	14,49,239	24,966	18,52,083	40,99,345
Unforeseen works	..	..	..	..	..	..	..	..	..	..	..	..	3,75,257
Total requirements for I Works	..	..	..	..	..	..	..	..	..	..	..	..	44,74,602
Total for I Works including old outlay	..	..	..	..	..	..	..	..	..	..	..	..	1,07,30,994

(Signed) J. W. MARTIN,
Superintending Engineer, II Circle.

ABSTRACT comparing the revised amounts with the estimates printed in Proceedings, Madras Government, No. 577 I., dated 1st October 1888.

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888.)	REVISED ESTIMATE.		
		Outlay to end of 1892–93.	Further outlay.	Total.
	RS.	RS.	RS.	RS.
Old outlay	30,81,755	30,31,755	..	30,81,755
1. Head works—				
Head works—				
2. Land	3.445	5,875	..	5,875
3. Works	1,27,917	51,849	6,500	58,349
4. Buildings	41,081	90,622	..	90,622
5. Miscellaneous	..	2,590	1,025	3,615
Total, 1 Head works	1,72,443	1,50,936	7,525	1,58,461
Eastern Section.				
2. Main canals and branches—				
Main canal—				
2. Land	5,188	5,188	..	5,188
3. Regulators	14,344	14,344	..	14,344
7. Bridges	1,550	1,260	..	1,260
9. Navigation works	7,844	7,844	..	7,844
11. Buildings	..	1,486	..	1,486
12 Earthwork	1,04,962	1,04,962	..	1,04,962
Total, Main canal	1,33,888	1,35,084	..	1,35,084
Masulipatam canal—				
2. Land	1,878	5,951	..	5,951
6. Other cross drainage	23,117	22,994	..	22,994
7. Bridges	..	..	..	..
9. Navigation works	1,872	1,780	..	1,780
11. Buildings	..	3,350	426	3,776
12. Earthwork	2,65,801	1,61,439	63,562	2,25,001
15. Miscellaneous	5,125	5,070	..	5,070
Total, 2 Main canals and branches	2,97,793	2,00,584	63,988	2,64,572
3. Distributaries—				
2. Land	4,725	6,225	7,870	14,095
3. Works	17,889	10,661	16,487	27,148
4. Earthwork	56,919	39,447	28,790	68,237
5. Miscellaneous	1,500	..	1,500	1,500
Total, 3 Distributaries	81,033	56,333	54,647	1,10,980
Total, Masulipatam canal	3,78,826	2,56,917	1,18,635	3,75,552
Pulleru canal—				
2. Main canals and branches—				
2. Land	6,775	5,469	3,650	9,119
3. Regulators	6,668	6,668	..	6,668
4. Falls and weirs	6,373	6,373	..	6,373
12, Earthwork	90,748	90,006	22,000	1,12,006
15. Miscellaneous	6,881	3,719	2,945	6,664
Total, 2 Main canals and branches	1,17,445	1,12,235	28,595	1,40,830
3. Distributaries—				
2. Land	30,946	12,001	13,556	25,557
3. Works	88,945	29,990	44,819	74,809
4. Earthwork	1,78,942	51,141	77,687	1,28,828
5. Miscellaneous	19,314	6,236	3,199	9,435
Total, 3 Distributaries	3,18,147	99,368	1,39,261	2,38,629
Total, Pulleru canal	4,35,592	2,11,603	1,67,856	3,79,459
Pamarru junction canal—				
2. Main canals and branches—				
2. Land	92	92	..	92
7. Bridges	3,850	3,528	..	3,528
11. Buildings	..	344	466	810
Total, Pamarru junction canal	3,942	3,964	466	4,430
Polraz canal—				
2, Main canal and branches—				
2. Land	5,517	2,279	330	2,609
3. Regulators	1,240	3,441	..	3,441
7. Bridges	5,900	..	..	..
8. Escapes	1,932	1,932	..	1,932
9. Navigation works	80,897	79,517	..	79,517
11. Buildings	4,633	2,031	..	2,031
12. Earthwork	39,902	50,604	..	50,604
15. Miscellaneous	7,069	7,027	300	7,327
Total, 2 Main canals and branches	1,47,090	1,46,831	630	1,47,461

Abstract comparing the revised amounts with the estimates, printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888).	REVISED ESTIMATE.		
		Outlay to end of 1892-93.	Further outlay.	Total.
	RS.	RS.	RS.	RS.
Eastern Section—cont.				
Polraz canal—*cont.*				
3. Distributaries—				
1. Preliminary expenses	378	408	..	408
2. Land	15,826	9,479	6,561	16,040
3. Works	46,582	40,603	6,293	46,896
4. Earthwork	98,852	70,470	18,993	89,463
5. Miscellaneous	6,930	879	1,125	2,004
Total, 3 Distributaries ..	1,68,567	1,21,839	32,972	1,54,811
4. Drainage and protective works—				
2. Land	150	..	185	185
3. Works	..	65	..	65
4. Earthwork	3,505	1,007	3,505	4,512
Total, 4 Drainage and protective works ..	3,655	1,072	3,690	4,762
Total, Polraz canal ..	3,19,312	2,69,742	37,292	3,07,034
Bantumilli canal—				
2. Main canals and branches—				
1. Preliminary expenses	..	76	..	76
2. Land	339	750	5,789	6,539
3. Regulators	785	785	..	785
7. Bridges	6,190	..	..	..
8. Escapes	6,460	..	..	..
9. Navigation works	76,485	57,019	5,927	62,946
11. Buildings	4,549	2,679	1,610	4,289
12. Earthwork	43,460	59,887	11,879	71,766
15. Miscellaneous	3,230	474	3,602	4,076
Total, 2 Main canals and branches ..	1,41,498	1,21,670	28,807	1,50,477
3. Distributaries—				
1. Preliminary expenses	292	295	..	295
2. Land	1,945	2,427	5,210	7,637
3. Works	3,837	14,740	6,545	21,285
4. Earthwork	9,210	14,539	15,704	30,243
5. Miscellaneous	768	111	652	763
Total, 3 Distributaries ..	16,052	32,112	28,111	60,223
Total, Bantumilli canal ..	1,57,550	1,53,782	56,918	2,10,700
Ellore canal—				
2. Main canals and branches—				
2. Land	..	..	30	30
5. River and hill torrent works	1,05,535	1,24,224	190	1,24,414
6. Other cross drainage works	2,430	2,254	..	2,254
7. Bridges	..	12,534	..	12,534
9. Navigation works	885	402	11,783	12,185
11. Buildings	..	2,838	..	2,838
12. Earthwork	..	16,334	..	16,334
15. Miscellaneous	4,265	3,513	436	3,949
Total, 2 Main canals and branches ..	1,13,115	1,62,099	12,439	1,74,538
3. Distributaries—				
2. Land	9,831	5,417	17,444	22,861
3. Works	20,937	25,558	25,179	50,737
4. Earthwork	24,807	15,515	25,667	41,182
5. Miscellaneous	766	840	2,412	3,252
Total, 3 Distributaries ..	56,341	47,330	70,702	1,18,032
4. Drainage and protective works—				
1. Preliminary expenses	..	11	..	11
2. Land	2,538	1	3,292	3,293
3. Works	..	366	5,000	5,366
4. Earthwork	34,080	42,370	16,790	59,160
5. Miscellaneous	10,120	..	..	..
Total, 4 Drainage and protective works ..	46,738	42,748	25,082	67,830
Total, Ellore canal ..	2,16,194	2,52,177	1,08,223	3,60,400
Ryves canal—				
2. Main canals and branches—				
2. Land	10,350	9,976	..	9,976
3. Regulators	20,884	20,541	..	20,541
4. Falls and weirs	5,815	5,815	..	5,815

Abstract comparing the revised amounts with the estimates printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888).	REVISED ESTIMATE.		
		Outlay to end of 1892-93.	Further outlay.	Total.
	RS.	RS.	RS.	RS.
Eastern Section—cont.				
Ryves canal—*cont.*				
2. Main canals and branches—*cont.*				
5. River and hill torrent works	5,599	5,599	..	5,599
7. Bridges	30,613	30,506	..	30,506
11. Buildings	2,853	2,853	..	2,853
12. Earthwork	3,81,572	3,74,733	..	3,74,733
15. Miscellaneous	1,641	1,641	..	1,641
Total, 2 Main canals and branches ..	4,59,327	4,51,664	..	4,51,664
3. Distributaries—				
2. Land	13,303	9,884	5,257	15,141
3. Works	35,719	36,767	9,882	46,649
4. Earthwork	65,108	61,418	24,854	86,272
5. Miscellaneous	4,857	4,424	6,055	10,479
Total, 3 Distributaries ..	1,18,987	1,12,493	46,048	1,58,541
4. Drainage and protective works—				
2. Land	457	185	..	185
3. Works	721	717	..	717
4. Earthwork	1,171	970	..	970
Total, 4 Drainage and protective works ..	2,349	1,872	..	1,872
Total, Ryves canal ..	5,80,183	5,66,029	46,048	6,12,077
Bank canal—				
2. Main canals and branches—				
2. Land	10,257	22,817	5,000	27,817
3. Regulators	6,940	9,276	..	9,276
5. River and hill torrent works	3,58,500	112	..	112
6. Other cross drainage works	6,650	..	..	..
7. Bridges	44,650	..	..	..
8. Escapes	5,830	..	..	..
9. Navigation works	17,195	18,859	..	18,859
11. Buildings	8,460	..	..	..
12. Earthwork	3,35,555	91,462	..	91,462
15. Miscellaneous	9,665	87	..	87
16. Maintenance	32,000	..	..	..
Total, 2 Main canals and branches ..	8,35,702	1,42,613	5,000	1,47,613
3. Distributaries—				
2. Land	21,017	..	..	..
3. Works	48,585	..	..	..
4. Earthwork	1,16,615	..	..	..
Total, 3 Distributaries ..	1,86,217	..	..	..
Total, Bank canal ..	10,21,919	1,42,613	5,000	1,47,613
4. Drainage and protective works—				
1. Sub-section—				
Drain along left bank of Masulipatam canal—				
2. Land	607	607	..	607
4. Earthwork	931	931	..	931
5. Miscellaneous	58	54	..	54
Total, Drain along left bank of Masulipatam canal ..	1,596	1,592	..	1,592
Kanakala drain—				
2. Land	1,908	..	..	..
3. Works	2,725	..	..	..
4. Earthwork	14,687	..	..	..
Total, Kanakala drain ..	19,320	..	..	..
Devarapalli drain—				
4. Earthwork	333	..	..	..
Taleru (Divi) drain—				
2. Land	1,333	..	..	..
3. Works	2,500	..	..	..
4. Earthwork	16,667	..	..	..
Total, Taleru (Divi) drain ..	20,500	..	..	..

Abstract comparing the revised amounts with the estimates printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No 577 I., 1st October 1888).	Revised estimate. Outlay to end of 1892–93.	Further outlay.	Total.
	RS.	RS.	RS.	RS.
Eastern Section—cont.				
Gudimotu drain—				
2. Land	667	..	..	..
3. Works	3,166	..	..	..
4. Earthwork	4,500	..	..	..
Total, Gudimotu drain ..	8,333	..	..	..
Mopidevi drain—				
4. Earthwork	167	..	..	..
Sivaganga drain—				
2. Land	211	211	..	211
Drain from Inampudi aqueduct to Dayyapu calva—				
2. Land	5,710	1,849	3,861	5,710
4. Earthwork	51,610	47,793	..	47,793
5. Miscellaneous	..	575	..	575
Total ..	57,320	50,217	3,861	54,078
3. Sub-section—				
Uppuluru drain—				
2. Land	1,033	1,033	..	1,033
3. Works	6,717	..	6,717	6,717
4. Earthwork	12,968	8,499	4,469	12,968
5. Miscellaneous	261	..	261	261
Total, Uppuluru drain ..	20,979	9,532	11,447	20,979
Chendroyakodu drain—				
2. Land	19,740	4,024	..	4,024
3. Works	23,805	18,950	..	18,950
4. Earthwork	82,763	52,585	..	52,585
5. Miscellaneous	3,119	141	4,718	4,859
Total, Chendroyakodu drain ..	1,29,427	75,700	4,718	80,418
Polrazkodu main drain and affluents—				
2. Land	23,830	2,559	..	2,559
3. Works	28,731	10,269	18,743	29,012
4. Earthwork	90,042	68,928	13,709	82,637
5. Miscellaneous	4,716	1,511	190	1,701
Total, Polrazkodu main drain and affluents ..	1,47,319	83,267	32,642	1,15,909
Kolleru embankment—				
2. Land	904	..	..	..
4. Earthwork	17,935	..	..	..
Total ..	18,839	..	..	..
4. Sub-section—				
Pullava main drain and affluents—				
2. Land	850	484	..	484
3. Works	2,505	..	2,505	2,505
4. Earthwork	21,787	24,445	..	24,445
5. Miscellaneous	365	430	1,146	1,576
Total, Pullava main drain and affluents ..	25,507	25,359	3,651	29,010
Damidi drain—				
2. Land	220	97	..	97
3. Works	1,865	..	1,865	1,865
4. Earthwork	5,986	5,107	..	5,107
5 Miscellaneous	448	398	95	493
Total, Damidi drain ..	8,519	5,602	1,960	7,562
Peddakommileru main drain and affluents—				
2. Land	2,200	1,313	..	1,313
3. Works	3,762	..	550	550
4. Earthwork	37,590	61,275	..	61,275
5. Miscellaneous	424	2,900	100	3,000
Total, Peddakommileru main drain and affluents ..	43,976	65,488	650	66,138
Peddalanka drain and affluents—				
2. Land	3,410	212	3,867	4,079
3. Works	945	..	7,200	7,200
4. Earthwork	84,090	56,500	1,07,207	1,63,707
5. Miscellaneous	778	32	2,113	2,145
Total, Peddalanka drain and affluents ..	89,223	56,744	1,20,387	1,77,131

Abstract comparing the revised amounts with the estimates printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888).	REVISED ESTIMATE.		
		Outlay to end of 1892–93.	Further outlay.	Total.
Eastern Section—cont.	RS.	RS.	RS.	RS.
4. Sub-section—*cont.*				
Lingala drain—				
2. Land	476	476	..	476
4. Earthwork	3,052	3,052	..	3,052
5. Miscellaneous	1,099	..	..	..
Total, Lingala drain ..	4,627	3,528	..	3,528
5. Sub-section—				
Lazzabanda drain and affluents—				
2. Land	18,975	4,166	3,275	7,441
3. Works	40,612	16,170	17,412	33,582
4. Earthwork	1,55,011	90,283	60,948	1,51,231
5. Miscellaneous	7,618	1,377	5,576	6,953
Total, Lazzabanda drain and affluents ..	2,22,216	1,11,996	87,211	1,99,207
Sultanagaram drain—				
2. Land	601	189	412	601
4. Earthwork	2,415	..	2,415	2,415
Total, Sultanagaram drain ..	3,016	189	2,827	3,016
Kanakavalli drain—				
1. Preliminary expenses	..	..	..	..
2. Land	1,117	1,844	1,819	3,663
3. Works	16,815	10,107	603	10,710
4. Earthwork	8,760	12,763	4,400	17,163
5. Miscellaneous	492	..	1,254	1,254
Total, Kanakavalli drain ..	27,184	24,714	8,076	32,790
Gudur swamp—				
2. Land	375	..	375	375
3. Works	1,500	..	1,500	1,500
4. Earthwork	5,625	..	5,625	5,625
Total ..	7,500	..	7,500	7,500
Saradayapeta drain—				
2. Land	1,600	1,600	..	1,600
Juvikanama drain—				
4. Earthwork	..	2,203	..	2,203
Yellamalli drain—				
15. Miscellaneous	..	..	20	20
Total, Eastern section ..	41,05,598	25,09,853	8,25,388	33,35,241
Western Section.				
Main canal—				
2. Main canals and branches—				
2. Land	10,870	10,734	..	10,734
3. Regulators	15,702	15,702	..	15,702
5. River and hill torrent works	465	465	..	465
7. Bridges	610	..	..	..
8. Escapes	2,124	2,124	..	2,124
9. Navigation works	212	212	..	212
11. Buildings	..	1,264	..	1,264
12. Earthwork	5,21,506	4,46,326	1,37,185	5,83,511
15. Miscellaneous	2,405	2,613	3,464	6,077
Total, Main canals and branches ..	5,53,894	4,79,440	1,40,649	6,20,089
3. Distributaries—				
3. Works	..	..	810	810
Total, Main canal ..	5,53,894	4,79,440	1,41,459	6,20,899
Nizampatam canal—				
2. Main canals and branches—				
7. Bridges	19,486	11,095	17,390	28,485
9. Navigation works	600	629	6,600	7,229
12. Earthwork	10,645	..	10,645	10,645
Total, 2 Main canals and branches ..	30,731	11,724	34,635	46,359
3. Distributaries—				
2. Land	..	..	1,800	1,800
3. Works	8,702	3,588	37,344	40,932
4. Earthwork	8,787	6,732	34,880	41,612
5. Miscellaneous	..	..	470	470
Total, 3 Distributaries ..	17,489	10,320	74,494	84,814
Total, Nizampatam canal ..	48,220	22,044	1,09,129	1,31,173

Abstract comparing the revised amounts with the estimates printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888).	REVISED ESTIMATE.		
		Outlay to end of 1892–93.	Further outlay.	Total.
	RS.	RS.	RS.	RS.
Western Section—cont.				
Bank canal—				
2. Main canals and branches—				
1. Preliminary expenses	..	700	..	700
2. Land	2,050	2,432	..	2,432
3. Regulators	3,390	..	3,390	3,390
5. River and hill torrent works	7,275	..	7,275	7,275
6. Other cross drainage works	..	..	3,320	3,320
7. Bridges	19,310	..	..	..
8. Escapes	2,865	..	2,865	2,865
9. Navigation works	82,610	67,565	40,977	1,08,542
11. Buildings	4,961	5,342	..	5,342
12. Earthwork	1,13,715	75,980	47,676	1,23,656
15. Miscellaneous	10,063	4,380	14,021	18,401
Total, 2 Main canals and branches ..	2,46,239	1,56,399	1,19,524	2,75,923
3. Distributaries—				
1. Preliminary expenses	..	1,041	213	1,254
2. Lands	7,548	464	6,462	6,926
3. Works	53,888	8,710	29,744	38,454
4. Earthwork	81,765	9,610	68,546	78,156
5. Miscellaneous	..	1,845	169	2,014
Total, 3 Distributaries ..	1,43,201	21,670	1,05,134	1,26,804
Total, Bank canal ..	3,89,440	1,78,069	2,24,658	4,02,727
Commamur canal—				
2. Main canals and branches—				
1. Preliminary expenses	..	384	..	384
2. Land	16,068	13,931	2,137	16,068
3. Regulators	2,593	2,593	..	2,593
5. River and hill torrent works	2,44,434	1,85,821	1,06,552	2,92,373
6. Other cross drainage works	..	156	354	510
7. Bridges	45,876	45,896	..	45,896
9. Navigation works	1,40,078	1,43,727	24,430	1,68,157
11. Buildings	3,928	3,927	..	3,927
12. Earthwork	3,07,055	2,47,616	16,595	2,64,211
15. Miscellaneous	9,562	17,560	..	17,560
Total, 2 Main canals and branches ..	7,69,594	6,61,611	1,50,068	8,11,679
3. Distributaries—				
1. Preliminary expenses	360	159	..	159
2. Land	19,588	7,058	4,128	11,186
3. Works	58,659	26,308	39,539	65,847
4. Earthwork	1,49,707	67,939	48,810	1,16,749
5. Miscellaneous	2,000	1,045	12,740	13,787
Total, 3 Distributaries ..	2,30,314	1,02,509	1,05,217	2,07,726
4. Drainage and protective works—				
2. Land	..	78	..	78
3. Works	..	..	66	66
4. Earthwork	..	1,423	760	2,183
Total ..	..	1,501	826	2,327
Total, Commamur canal ..	9,99,908	7,65,621	2,56,111	10,21,732
4. Drainage and protective works— Drainage channel from Emileru stream to Feringhidibba inlet—				
2. Land	900	891	..	891
4. Earthwork	9,528	5,403	..	5,403
Total ..	10,428	6,294	..	6,294
Repalle drain—				
1. Preliminary expenses	..	198	330	528
2. Land	21,698	2,706	18,490	21,196
3. Works	39,847	36,409	22,430	58,839
4. Earthwork	1,79,824	1,27,906	83,716	2,11,622
5. Miscellaneous	5,140	4,060	..	4,060
Total, Repalle drain ..	2,46,509	1,71,279	1,24,966	2,96,245

Abstract comparing the revised amounts with the estimates printed, &c.—*cont.*

—	Sanctioned estimate (*vide* G.O., No. 577 I., 1st October 1888).	REVISED ESTIMATE. Outlay to end of 1892–93.	Further outlay.	Total.
Western Section—cont.	RS.	RS.	RS.	RS.
4. Drainage and protective works—*cont.*				
Bhattiprole drain—				
2. Land	..	..	5,000	5,000
3. Works	15,601	22,684	..	22,684
4. Earthwork	28,166	2,158	48,166	50,324
5. Miscellaneous	2,439	25	2,584	2,609
Total	46,206	24,867	55,750	80,617
Peddapalli drain—				
2. Land	123	96	..	96
3. Works	..	..	5,000	5,000
4. Earthwork	2,210	1,930	5,000	6,930
Total	2,333	2,026	10,000	12,026
Nizampatam drain—				
2. Land	3,350	..	..	..
3. Works	6,740	..	6,740	6,740
4. Earthwork	6,801	..	6,801	6,801
Total	16,891	..	13,541	13,541
Tungabhadra drain—				
1. Preliminary expenses	..	252	328	580
2. Land	17,172	4,959	13,691	18,650
3. Works	99,794	2,497	1,89,157	1,91,654
4. Earthwork	4,92,153	1,87,966	4,90,577	6,78,543
5. Miscellaneous	6,152	1,141	5,140	6,281
Total	6,15,271	1,96,815	6,98,893	8,95,708
Romperu drain—				
2. Land	2,593	976	1,500	2,476
3. Works	21,790	..	15,000	15,000
4. Earthwork	1,59,717	99,190	1,49,763	2,48,953
Total	1,84,100	1,00,166	1,66,263	2,66,429
Vetapalem-Kunderu drain below Vetapalem—				
4. Earthwork	..	2,699	..	2,699
Koppalla drain—				
2. Land	..	..	1,540	1,540
3. Works	..	320	1,330	1,650
4. Earthwork	..	..	1,910	1,910
Total, Koppalla drain	..	320	4,780	5,100
1. Preliminary expenses	..	..	90	90
2. Main canals and branches—				
11. Buildings	..	..	25,000	25,000
Total, Western section	31,13,200	19,49,640	18,30,640	37,80,280
Unforeseen works	2,57,998	..	3,75,257	3,75,257
Total for works	1,07,30,994	76,92,184	30,38,810	1,07,30,994
Establishment	25,07,268	18,33,752	6,73,516	25,07,268
Tools and plant	6,68,043	5,23,564	1,44,479	6,68,043
Loss by exchange	20,000	9,929	10,071	20,000
Total	1,39,26,305	1,00,59,429	38,66,876	1,39,26,305
Less receipts on capital account	6.521	15,196	—8,675	6,521
Net Total	1,39,19,784	1,00,44,233	38,75,551	1,39,19,784
Indirect Charges.				
Capitalized abatement of Land Revenue	5,52,200	4,16,204	1,35,996	5,52,200
Leave and pension allowances	4,28,960	3,34,667	94,293	4,28,960
Total indirect charges	9,81,160	7,50,871	2,30,289	9,81,160
Grand Total	1,49,00,944	1,07,95,104	41,05,840	1,49,00,944

28th Sept. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

ORDER—dated 11th October 1893, No. 857 I., Public Works.

The statement showing the works of the Kistna delta system on which expenditure has still to be incurred is approved and will be printed with the two abstracts appended to the note by the Chief Engineer for Irrigation.

2. The Superintending Engineer, II Circle, will expedite the submission of the estimate called for by the Chief Engineer for Irrigation for rendering the Ryves canal efficient for the contemplated extension of irrigation under that canal.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India with a request that the extension of sanction accorded to the Kistna delta completion estimates in the Government of India letter, No. 10 I., dated 22nd January 1889, which expired on the 31st March 1893, be extended for a further period of 5 years from 1st April 1893.

[Here enter No. 858 I., dated 11th October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation, with two statements.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 11th October 1893, No. 858 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 11th.

Recd. *Encl.*

G.O., 11th Oct. 1893, Nos. 857 I., 858 I.

OCTOBER.

Kistna Delta Completion Estimates

Requesting an extension of the sanction to the — for a period of five years from 1st April 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

No. 1770.

Progress Report of Works in No. II Periyár Division for the month of September 1893.

1 to X Reach (1 *to* 30½ *miles*).—In the 1st reach a small irrigation sluice has been built at 5½ miles for the irrigation of some 400 acres and an additional trough has been sanctioned at 17¾ miles in the 4th reach to convey water for irrigation across the channel.

Two chains still remain incomplete in the 6th reach; otherwise the works in the main channel are practically finished up to the end of the 10th reach or for 30 miles from the head.

2. *XI Reach* (30½ *to* 36 *miles*).—The following masonry works:—

Culvert 30½ mile, about half completed.
Superpassage 31 " " " "
Weir 32 " completed.
Bridge 32½ " about one-third completed.
Superpassage 32¾ " " two-thirds "
Culvert 33 mile 3 fur., about two-thirds completed.
" 33 " 5 " " " "
Weir 34 mile, masonry just started.
" 34¼ " will be finished in October.
" 34⅛ " " " "

The earth-work is in progress for 4 miles out of the 6 in this reach. Of the 4 miles in progress, it may be roughly stated to be two-thirds completed.

3. The 12th reach has not been touched except taking up and demarcating the land.

4. *Branch channels.*—Four works were left out by accident in the 1st branch channel. These have been sanctioned lately and the superpassage at 1 mile 3 furlongs and a bridge at 1 mile 4 furlongs commenced and will soon be finished. Owing to the extraordinary season, the Sholavandan tank holding a good supply throughout the year, the other two works were not put in hand as they are situated under the tank.

5. 2*nd Branch channel.*—A small bridge is under construction at half a mile from the head and should be completed in October.

3rd to 8th call for no remarks.

6. 9*th Branch Channel.*—In good progress, both masonry and earth-work.

The Chittamputty, Kunnathur and Pappagudi offtakes are well in hand and I hope this important channel will soon be completed by the end of the official year.

7. 10*th Branch Channel—Masonry.*—

Drops 1 to 3, about three-fourths completed.
Drop 4 " half completed.
" 5, just commenced.
Drops 6 and 7, about three-fourths finished.

There will be a saving of over Rs. 800 on each of these drops.

Earth-work for about $1\frac{1}{2}$ miles—seven-eighths completed.

8. *General.*—The daily number of work-people remained about the same as for the previous month although the season is still very favorable and healthy.

CHITTAMPUTTY,
5th October 1893.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár Divn.

No. 300 P.R.

Copy forwarded to the Chief Engineer, Public Works Department.

TRICHINOPOLY,
8th October 1893.

(Signed) W. L. C. BADDELEY, Major, R.E.,
Suptg. Engineer, VI Circle.

ORDER—dated 18th October 1893, No. 864 I., Public Works.

Recorded and communicated to the Government of India.

[Here enter No. 865 I., dated 18th October 1893.]

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Superintending Engineer, VI Circle.
" Chief Engineer for Irrigation.
" Revenue Department.

ENDORSEMENT—dated 18th October 1893, No. 865 I., Public Works.

Copy of the above forwarded to the Government of India.

(By Order.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 18th.

Recd. *Encl.*

G.O., 18th Oct. 1893, Nos. 864 I., 865 I.

OCTOBER.

Periyar Project

Forwarding copy of Proceedings recording the progress report of works in No. II Periyár division for the month of September 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper:—

G.O., dated 10th October 1893, Mis. No. 3720, Revenue.

Read—the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 29th September 1893, Mis. No. 5615:—

Read—the following letter from the Collector of Trichinopoly, dated 11th September 1893, Reference on Current No. 1269-Revenue:—

I have the honour to request the sanction of the Board for the sale, by auction, of the lands in the bed of a pond, in the village of Sevalur, Kulitalai taluk, for the conversion of its wet ayacut into dry and for the removal of the pond from the list of irrigation sources.

2. One Kuppachi Reddi of Sevalur holds a patta for S. F. No. 39-B in the village, 84 cents in extent, and registered as 6th taram wet, assessed at Rs 2-2-0. This field forms the whole wet ayacut of a rainfed pond, 11·61 acres in extent, in S. F. No. 38, and registered as pond poramboke. The divisional officer reports that the pond is very much silted up and out of order and cannot hold sufficient water for the irrigation of S. F. No. 39-B, and he therefore recommends that both the pond and its ayacut may be converted into 7th taram dry, and assigned to the petitioner Kuppachi Reddi on payment of tree value as requested by him.

3. On a reference made to the Public Works Department, I am informed that the pond in question is much silted and that its repair is not advisable as the cost would be out of all proportion to the revenue derivable.

4. The tank is said to have been in a ruined condition, unfit for irrigation for the past ten years, during which period it was cultivated with paddy for 3 years, with ragi for 2 years and with cholum for 1 year and left waste for 4 years. The wet crops were irrigated partly by the pond and partly by a private well.

5. The assessment of the pond will more than cover the loss by conversion of the wet field to dry.

Resolution—dated 29th September 1893, Mis. No. 5615.

Submitted for the orders of Government.

2. The Collector of Trichinopoly recommends the abandonment of a tank situated in S. No. 38 in the village of Sevalur in the Kulitalai taluk and the sale of the tank-bed lands by auction, the ayacut lands being transferred from wet to dry.

3. The pond covers an area of 11·61 acres in S. No. 38, but its ayacut is only 84 cents in S. No. 39-B, assessed at Rs. 2-2-0, and, even for this small area, the pond does not, it is stated, afford an adequate supply of water, being very much silted up and out of order. During the last 10 years, the ayacut was left waste for 4 years and was cultivated with dry crops for 3 years, while the paddy crops, which were raised during the remaining 3 years, were matured by the aid of a private well. The Public Works Department does not consider it advisable to incur the expense of restoring the pond.

4. The dry assessment upon the tank-bed lands at the highest dry rate prevailing in the village other than the rates for permanently improved lands will be Rs. 11-10-0, while the loss of revenue consequent on the transfer of the ayacut from wet to dry will be about Rs. 1-5-0 only. In these circumstances, the Board supports the Collector's proposal.

Order—dated 10th October 1893, Mis. No. 3720, Revenue.

The Collector's proposal supported by the Board of Revenue is approved and sanctioned.

(True Extract.)

(Signed) E. GIBSON,
Ag. Secretary to Government.

ORDER—dated 20th October 1893, No. 868 I., Public Works.

Communicated to the Superintending Engineer, VI Circle, for information.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

G.O., 20th Oct. 1893, No. 868 I.

OCTOBER.

Pond in Kulitalai Taluk

Proceedings, Revenue Department, approving and sanctioning the proposal for the abandonment of a — in Trichinopoly district and the sale of the tank-bed lands by auction, communicated to the Superintending Engineer, VI Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

G.O., dated 7th October 1893, Mis. No. 3686, Revenue.

Read—the following Proceedings of the Board of Revenue (Land Revenue), dated 8th September 1893, Mis. No. 5227:—

Read—the following letter from the Collector of Ganjám, dated 26th August 1893, Ref. Current No. 898-Ver.:—

Referring to Board's Proceedings, Mis. No. 3289, dated 31st May 1893, I have the honour to report after inspection that there is no objection to the breaching of the Goomsur jheel and the reclamation of a large portion of its bed. The total area is not so large as supposed by the Chief Engineer, being only acres 32·45. The jheel is entered in the accounts under the name of Soro Ghayi and is classed as a minor irrigation work. The whole ayacut is commanded by the Mahánadi canal.

2. It is not possible to drain the whole jheel after the breaching proposed by the Public Works Department. The eastern portion will still contain nearly 4 feet of water, which will be useful for village purposes.

3. I enclose a copy of the Deputy Collector's report on the subject, No. 865, dated 26th June 1893, and the plan sent by him in original; also a copy of the Executive Engineer's note, dated 7th August 1893.

4. Any land which is reclaimed will be sold by auction in suitable lots.

5. In the last half of July and the first few days of August I investigated all the claims to free irrigation under the Mahánadi canal and similar claims under distributary No. 2 of the Rushikulya canal and as far as possible passed orders on each.

ENCLOSURE.

From M.R.Ry. B. NARAYANAMURTI PUNTULU Garu, General Deputy Collector of Ganjám, to the Collector of Ganjám, dated Russellkonda, 26th June 1893, No. 865.

Referring to your endorsement R. C. No. 898-Rev. of 1893, dated 13th instant, on G.O., No. 370, dated 7th April last, Public Works, Irrigation, I have the honour to submit the following report after personally inspecting the Goomsur jheel.

2. In the settlement diglott register of the village of Dengabadra, the jheel under reference is shown by the name of Soro Ghayi consisting of survey numbers—

	Extent.
	ACS.
481-A.	13·93
499	18·52
	32·45

The extent of the jheel is thus acres 32·45, but not 200 acres as noted by the Acting Chief Engineer in paragraph 9 of his notes of inspection.

3. It is one of the three sources of irrigation of the village and is placed in the second group with an ayacut of acres 160·61, of which the Government land is acres 125·42, charged with an assessment of Rs. 390–13–0 at Rs. 2–8–0 an acre, and the remaining land goes under inam. It has three feeders as detailed below:—

(*a*) Channel comprising of survey Nos. 517 and 640. The surface drainage and the surplus river water of the fields of Nettanja, a Government village, flow through the channel into the jheel.

(*b*) The Loharakhandi channel.

4. The Mahánadi canal intercepts the two channels A and B and an under-tunnel No. 1 is built where the canal crosses the channel A, and channel B is diverted to it through a new bed excavated for the purpose. Water from this under-tunnel finds its way into the jheel and thence to the Mahánadi through the Kaliamba channel shown in the sketch as survey No. 356. The jheel cannot therefore be entirely drained and wholly brought under cultivation without a portion of which, say, 4 acres, being set apart for the passage of water from under-tunnel No. 1.

5. A rough sketch of the jheel is attached for ready reference, and a glance at which will show that it encircles the old Goomsur fort now under cultivation.

6. The bed of the jheel is not uniform in level. The eastern portion of it is deep and it now contains about 5 feet of water at the deepest part, while there is hardly any water in the western portion thereof. It is reported that in August and September there will be 8 and 3 feet of water in the eastern and western portions respectively, and that the former never gets dry in the worst of seasons. The ryots of the village are anxious to retain the deepest portion of the jheel, as it is very useful for themselves and their cattle throughout the year. The cattle ramp of the village is far from the village, and buffaloes, I hear, are not allowed to be washed in the canal. Moreover, the draining and reclaiming of the eastern portion of the jheel entails much labour and cost without corresponding gain to Government.

7. Survey No. 499 comprises three sides of the jheel, the northern portion of which, C to D, and the whole of the western portion, from D to E, with an extent of 18 acres, can very easily be brought under cultivation and can either be given out on patta to the villagers who are ready to take or *disposed of in public auction*. The former course, however, appears to be equitable. If the other portion is to be reclaimed, a bund F. G. H. as marked in red ink in the sketch so as to provide free passage for water from under-tunnel No. 1 as stated above must be raised and the portion between the bund and the fort, about 10 acres in extent, be brought under cultivation. Considering the usefulness of this portion to the cattle and people of two villages, *it may be left as it is* or given out on joint patta the whole jheel to the ryots of the village as they seemed to be willing to take up the whole in view of gradually reclaiming as much as possible on joint labour and keeping the deepest portion as a tank for the use of the village community.

Resolution—

Submitted to Government with reference to its Order, dated 20th May 1893, Mis. No. 1896.

2. In the circumstances detailed in the Deputy Collector's report, the Board recommends that the Collector's proposals in paragraphs 1, 2 and 4 of his letter be approved.

Order—dated 7th October 1893, Mis. No. 3686, Revenue.

The Collector's proposals, supported by the Board of Revenue, are approved and sanctioned.

(True Extract.)

(Signed) E. GIBSON,
Ag. Secretary to Government.

ORDER—dated 23rd October 1893, No. 872 I., Public Works.

Communicated to the Superintending Engineer, I Circle, for information.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 23rd.

Recd. *Encl.*

G.O., 23rd Oct. 1893, No. 872 I.

OCTOBER.

Goomsur Jheel

Proceedings, Revenue Department, approving and sanctioning the proposal of the Collector of Ganjám in connection with the breaching of the — and the reclamation of a large portion of its bed, communicated to the Superintending Engineer, I Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From J. W. MARTIN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Madrás, 6th October 1893, No. 1639 K.S.

I have the honour to forward herewith, for your approval and sanction of Government, second application for modification of allotments.

2. As regards the net surrender of Rs. 25,000 under Capital in the Kistna Western division, a copy of Executive Engineer's letter No. 372 S., dated 3rd October 1893, in explanation, is forwarded herewith.

3. An application for the modification of allotments in the Gudiváda division will be sent shortly.

ENCLOSURE.

APPLICATION for additions and modifications of allotments for irrigation works for 1893–94, II Circle.

Division.	Main and sub-heads.	Names of works.	Existing grant.	Modification of allotments applied for. Reduction.	Modification of allotments applied for. Increase.	Modification of allotments proposed. Reduction.	Modification of allotments proposed. Increase.	Remarks.
			RS.	RS.	RS.	RS.	RS.	
		49. IRRIGATION.						
		CAPITAL EXPENDITURE ON PUBLIC WORKS NOT CHARGED TO REVENUE.						
		Kistna Delta System.						
		I Works.						
		Major.						
Kistna Eastern Division.	(2) 3. Regulators ..	Constructing certain wall in rear of Seetanagaram head sluice.	..	..	1,900	..	1,900	Carried out under orders of the Chief Engineer for Irrigation.
	Do. ..	Driving piles in front of Seetanagaram head sluice ..	..	..	3,100	..	3,100	
	(2) 9. Navigation ..	Wharf wall at Ellore	..	..	5,000	..	5,000	Sanctioned since the submission of budget for 1893–94.
	(2) 12. Earthwork ..	Excavating bank canal	5,000	— 5,000	..	— 2,683	..	Bank canal project has been abandoned.
	Do. ..	Widening Ellore canal	..	..	2,000	..	2,000	Estimate is under preparation; work commenced on orders of the Superintending Engineer.
	Do. ..	Do. Masulipatam canal	15,000	— 5,000	..	— 5,000	..	More than Rs. 10,000 cannot be spent this year.
	(3) 3. Works ..	Masonry works on west side channel	7,500	— 7,500	..	— 7,500	..	Estimate has not yet been sanctioned.
	(3) 4. Earthwork ..	Excavating Butumillipad channel	3,500	— 3,500	..	— 3,500	..	The name of Butumillipad channel has been altered to Vungutur channel.
	Do. ..	Do. Chirivada channel	..	..	2,500	..	2,500	Estimate for this channel was sanctioned since the submission of budget for 1893–94.
	Do. ..	Do. Vungutur channel	..	..	4,000	..	4,000	Do. do.
	Do. ..	Do. Madepalli channel	..	..	2,262	..	2,262	Do. do.
	Do. ..	Earthwork of west side channel	18,000	— 18,000	..	— 18,000	..	Estimate has not been sanctioned.
	Do. ..	Excavating Medur channel	..	..	4,000	..	4,000	{ These form a part of the west side channel project which has been sanctioned separately.
	Do. ..	Do. Kistnapuram branch	..	..	2,000	..	2,000	
	(4) 4. Do. ..	Drainages and protective works	..	..	350	..	350	Required to complete the estimate for the work.
		Minor Works.						
		Compensation for land	4,500	..	5,000	..	5,000	
		Total Kistna Eastern ..	..	— 36,683	32,112	— 36,683	32,112	
	(2) Main canals and branches.							
	(12) Earthwork ..	Widening western delta main canal	60,000	— 5,000	..	— 5,000	..	
	15. Miscellaneous ..	Constructing a retaining wall round the island separating the head lock at Seetanagaram from the head sluice.	2,500	— 1,000	..	— 1,000	..	

Kistna Western Division.	(9) Navigation works.	Constructing terminal escape or tidal lock weir on bank canal.	3,500	— 1,500	..	— 1,500	..	
	(12) Earthwork ..	Improvements to bank canal	8,000	— 5,000	..	— 5,000	..	
	Do. ..	Do. to Nizampatam canal	..	..	500	..	500	
	(9) Navigation works.	Constructing a wharf at Santaravur	3,000	— 3,000	..	— 3,000	..	
	5. River and Hill torrent works.	Widening roadway over Allur surplus sluices ..	1,000	— 1,000	..	— 1,000	..	
	9. Navigation works.	Reconstructing and extending revetment in rear of Kollimerla weir channel 19 miles 4 furlongs of Commamur canal.	..	..	1,500	..	1,500	Please see Executive Engineer's letter No. 372 S., dated 3rd October 1893.
	12. Earthwork ..	Improvements to Commamur canal	6,000	— 4,000	..	— 4,000	..	
	Do. ..	Constructing revetment to the left side slope from 27/1 to 27/6 miles of Commamur canal.	..	..	1,500	..	1,500	
	3. Distributaries.							
	4. Earthwork ..	Nizampatam canal west side channel extension ..	5,000	— 3,000	..	— 3,000	..	
	3. Works ..	Constructing an aqueduct at Nallavada over Nallavada surplus channel for west side channel extension.	..	..	3,000	..	3,000	
	4. Earthwork ..	Excavation of Aravapalli channel	1,500	— 1,500	..	— 1,500	..	
	Do. ..	Do. of Hannan's channel	..	..	500	..	500	
	Do. ..	Excavating Kollur block	..	..	500	..	500	
	Do. ..	Do. Kollipara channel	..	..	500	..	500	
	Do. ..	Do. Pundla channel	3,000	— 3,000	..	— 3,000	..	
	3. Works ..	Irrigation and drainage sluices in the 1st reach of Commamur canal and channels from the former.	..	..	1,000	..	1,000	
	4. Earthwork ..	Karlapalum and Kankatapalum, branches of Bápatla channel.	4,000	— 4,000	..	— 4,000	..	
	Do. ..	Excavation of Mulapalem branch of Bápatla channel.	..	..	2,000	..	2,000	
	Do. ..	Do. of Kankatapalem branch of do.	..	..	2,000	..	2,000	
	Do. ..	Masonry sluices on Bápatla channel and branches ..	2,000	— 2,000	..	— 2,000	..	
	4. Drainage and Protective works.							
	4. Earthwork ..	Excavating Tenali drain	20,000	— 5,000	..	— 5,000	..	
	Do. ..	Do. Allaparru drain	2,000	— 2,000	..	— 2,000	..	
	Do. ..	Do. Kuchinapudy drain	2,000	— 2,000	..	— 2,000	..	
	Do. ..	Straight cut on Bhattiprole drain below Iskapalle aqueduct.	3,000	— 3,000	..	— 3,000	..	
	Do. ..	Excavating Romperu drain	3,000	— 2,000	..	— 2,000	..	
	Do. ..	Do. Swarna affluent	2,000	— 1,000	..	— 1,000	..	
	Do. ..	Do. Alluru affluent	2,000	..	1,000	..	1,000	
	3. Works	Bridge over Tungabhadra at Ponnur	6,000	..	3,000	..	3,000	
	5. Miscellaneous ..	Constructing new under-tunnel for Guntur Nalla ..	..	..	2,500	..	2,500	
	....	Items costing Rs. 2,500 and under	10,800	..	4,500	..	4,500	
		Total Kistna, Western ..	..	— 49,000	24,000	— 49,000	24,000	
		Total I, Works, Kistna Delta ..	..	— 85,683	56,112	— 85,683	56,112	* This includes Rs. 25,000 transferred in G.O., No. 935 I., dated 4th Nov. 1893, to the Periyár Project No. I Division.
		Net decrease ..	..	—29,571 *	..	—29,571*	..	

Application for additions and modifications of allotments for irrigation works for 1893–94, II Circle—*cont.*

Division.	Main and sub-heads.	Names of works.	Existing grant.	Modification of allotments applied for. Reduction.	Modification of allotments applied for. Increase.	Modification of allotments proposed. Reduction.	Modification of allotments proposed. Increase.	Remarks.
			RS.	RS.	RS.	RS.	RS.	
Nellore Division.		*Pennér Anicut System.*						
	(3) 3. Works ..	Constructing surplus weir in Ramudupalem channel ..	..	..	2,600	..	2,600	Increase due to this estimate having been transferred from 1, Extensions and Improvements.
		Total Pennér Anicut System ..	..	..	2,600	..	2,600	
		Sangam Anicut System.						
	(2) 2. Land ..	Kanigiri Reservoir compensation	2,000	— 1,700	..	— 1,700	..	The redistribution of grants now proposed is found necessary on account of the progress of some of the works being better than was anticipated and the progress of others not being so satisfactory.
	(3) Do. ..	Eastern channel III section compensation	1,000	— 500	..	— 500	..	
	Do. ..	Central channel compensation	500	— 200	..	— 200	..	
	(3) 3. Works ..	Allur tank supply channel, 3 bridges	5,800	— 500	..	— 500	..	
	Do. ..	Duvvur branch channel, minor channel 2 miles 930 feet right bank.	4,000	— 500	..	— 500	..	
	(3) 4. Earthwork ..	Purni tank supply channel	3,000	— 1,000	..	— 1,000	..	
		Minor channel to Padugupad, Pothireddipalem and Elliahpallem fields.	4,000	— 2,500	..	— 2,500	..	
		Minor works	7,631	— 4,000	..	— 4,000	..	
	(4) 2. Land ..	Alluru main drain compensation	2,000	— 1,000	..	— 1,000	..	The reduction of grants for land compensation, &c., is recommended.
		Total Sangam Anicut System ..	..	— 11,900	..	— 11,900	..	
		III. Tools and Plant.						
Kistna Eastern Division.	....	1. Circular trap punt	..	..	422	..	422	To meet the cost of punt transferred from the Gódávari Eastern division.
		Total Tools and Plant ..	..	..	422	..	422	
		42. MAJOR WORKS, WORKING EXPENSES.						
		1. EXTENSIONS AND IMPROVEMENTS.						
Nellore Division.	....	Pennér anicut system	1,224	— 1,000	..	— 1,000	..	Not required.
	....	Sangam anicut system	4,183	..	1,000	..	1,000	
		2. MAINTENANCE AND REPAIRS.						
Gudiváda Division.	....	Additional amount required	40,000	..	5,000	..	5,000	The amout surrendered under Pennér anicut system may be transferred to Gudiváda division.
Nellore Division.	....	Pennér anicut system	30,000	— 5,000	..	— 5,000	..	Not required.

43. MINOR WORKS AND NAVIGATION.

		WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.						
Buckingham Canal Division.	2—12	Improvements to canal 111/5 to 113/1 miles	1,000	..	470	..	470	
	2— 9	Constructing lock and flood gate on the the south bank of the Kondaleru.	28,400	..	..	..	..	
	2— 2, 2—12, 2—15	Improvements and diversions to canal 43 miles 5 furlongs to 65 miles and 5 furlongs.	40,132	..	164	..	164	
	2— 9	Constructing lock at Coromandel flood gate	18,300	..	200	..	200	
	2— 2, 2—12, 2—15	Diversion to canal from Chintamani backwater to Pulicat lake.	300	— 200	..	— 200	..	
	2— 9	Constructing lock at Chintamani south flood gate ..	..	..	1,292	..	1,292	
	2— 9	Rebuilding revetment of chamber 1½ to 1 slope and constructing two lascars' huts at Chintamani lock.	..	..	2,320	..	2,320	
	2— 9	Constructing a lock at the south side of the Pennér river.	10,674	— 1,674	..	— 1,674	..	
	2— 9	Constructing a lock at the north side of the Pennér river.	10,588	— 1,588	..	— 1,588	..	
	2—12	Siding basin at Konupur	..	..	230	..	230	
	2— 2, 2—12, 2—15	Pennér south diversion from 113th mile 1 furlong to south border of the river.	..	..	400	..	400	
	2—15	Fixing boundary granite stones to define canal lands southern canal.	1,200	..	..	..	..	
	2— 2	Diversion to canal 74/2½ to 78 miles at Swarnamukhi ..	1,500	..	..	..	..	
	2—12	Alterations to existing works at Chenneru river ..	10,700	— 810	..	— 810	..	
	....	Improvements to canal in miles 170/6 to 173/3 ..	..	..	200	..	200	
	2—12	Improvements to canal from 134/5 to 150/5	..	..	1,000	..	1,000	
	2— 9	Sheathing 20 flood gates with copper	7,326	— 1,862	..	— 1,862	..	
	2—15	Demarcating canal lands northern canal	612	— 142	..	— 142	..	
		Total Buckingham Canal ..	..	— 6,276	6,276	— 6,276	6,276	
		WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.						
Nellore Division.	....	Pakala new tank improvements	..	..	500	..	500	The redistribution of grants is necessary to cover the expenditure already incurred.
		Kaluvoy tank improvement	..	..	500	..	500	
		Karedu tank supply channel improvements	4,000	— 2,000	..	— 2,000	..	
		Pakala old tank improvements	..	..	1,000	..	1,000	
		Total ..	..	— 2,000	2,000	..	..	
		Repairs	25,000	— 5,000	..	— 5,000	..	From the amounts of the estimates now sanctioned and from the expenditure incurred up to date the surrender now proposed is necessary.
		Total ..	..	— 5,000	..	— 5,000	..	

Application for additions and modifications of allotments for irrigation works for 1893–94, II Circle—*cont.*

Division.	Main and sub-heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction	Increase.	Reduction.	Increase.	
			RS.	RS.	RS.	RS.	RS.	
		AGRICULTURAL WORKS, MAJOR.						
Kistna Eastern Division.	....	Raising Kistna river bank	..	..	5,000	..	5,000	Estimate having been sanctioned as a major work, the provision of Rs. 1,000 under minor is surrendered and included in the Rs. 5,000 asked for under major works.
Nellore Division.	Drainage	Improving the first four miles of the Moldevi drain ..	..	..	2,000	..	2,000	Required to cover the expenditure already incurred.
		Minor Original Works.						
Kistna Eastern Division.	....	River embankments	1,000	— 1,000	..	— 1,000	..	
		Total Agricultural Works ..	..	— 1,000	7,000	..	..	
		Agricultural repairs.						
Kistna Western Division.	....	River conservancy	5,000	..	5,000	..	570	
		Investigation of Kistna upland taluks.						
	Establishment ..	Original works	4,831	— 3,331	..	— 3,331	..	
		Establishment	1,000	..	2,000	..	2,000	
		No. 7 Party, Tank Restoration Scheme.						
....		Establishment	5,124	— 624	..	— 624	..	
		Total ..	..	— 3,955	2,000	..	..	

(Signed) J. W. MARTIN,
Superintending Engineer, II Circle.

Telegram to the Superintendent of Works, No. I Periyár Division, dated 13th October 1893, No. 36.

"Further Rs. 17,007 including establishment available. Please wire if you can utilize."

Telegram from the Superintendent of Works, No. I Periyár Division, dated Periyakulam, 17th October 1893.

Telegram number 36. The sum can be utilized.

No. 148.

Submitted to Government.

2. 49. *Capital Expenditure not charged to Revenue.*—From the grant for works in the Kistna Eastern division the Superintending Engineer proposes a surrender of Rs. 6,888, but this amount should be reduced to Rs. 4,571, the difference Rs. 2,317 having already been withdrawn in the orders marginally noted. Including establishment charge, the net surrender is Rupees 6,772 from which Rs. 422 required in the same division under tools and plant may be appropriated, leaving Rs. 6,350 available for transfer elsewhere.

G.O., No. 805 I., dated 19th September 1893.
" " 829 I. " 23rd " "

3. The surrender of Rs. 25,000 from the grant for works in the Kistna Western division has already been transferred to the Periyár No. I division.

4. From the surrender of Rs. 11,900 or Rs. 13,855 including establishment from the grant for the Sangam anicut system owing to the progress of works not being so satisfactory as was anticipated, Rs. 2,600 or Rs. 3,198 including establishment required for the Pennér anicut system may be appropriated, the balance Rs. 10,657 and Rs. 6,350 referred to in paragraph 2 above, making a total of Rs. 17,007 being transferred, as shown in the margin, to the Periyár No. I division, the Superintendent of Works having reported in his telegram of the 17th instant that he can utilize this amount in addition to the grant already at his disposal.

	RS.
Reserve—	
Works	13,827
Establishment	3,180
Total ...	17,007

5. 42. *Major Works (working expenses).*—The amount surrendered from the grant for extensions and improvements, Pennér anicut system, may be transferred to meet the demand under the same head for the Sangam anicut system.

6. In his endorsement, No. 1411 K.S., dated 2nd September 1893, the Superintending Engineer requested that the grant of Rs. 40,000 for the Gudiváda division under Maintenance and Repairs may be increased by Rs. 10,000, the expenditure incurred up to end of August being Rs. 35,980. The increase under this head was said to be attributable to—

(1) The very heavy deposits of silt which occurred last year and which necessitated much larger clearances than usual.

(2) The damage done to minor channels by the floods of last October.

(3) The fact that the irrigated area has been increased this year by nearly 20,000 acres and as this was anticipated it was deemed advisable to put many channels in proper repair, which hitherto have been neglected.

(4) The transfer of "lock" and "delta" lascars to the "works" establishment and the consequent necessity of providing for their pay under this head.

In this office memorandum No. 156 K.S., dated 15th September 1893, the Superintending Engineer was requested to report if the whole or any portion of the increase cannot be met by transfers from the grants for other divisions in the circle, and he was reminded that applications for additional funds should not be submitted except

under very exceptional circumstances and that outlay should not have been incurred in anticipation of an additional allotment if the amount required could not be met by a re-appropriation of the grants at the Superintending Engineer's disposal. A reply to this reference has not yet been received, but the Superintending Engineer proposes in the present statement to transfer Rs. 5,000 surrendered from the grant for Maintenance and Repairs, Pennér anicut system, to augment the existing grant for the Gudiváda division under the same head. This transfer may be sanctioned, but as it is desirable that expenditure on working expenses should be kept down as much as possible, no proposal for any further addition should be entertained unless absolutely required to provide for expenditure due to abnormal causes.

7. 43. *Minor Works and Navigation.*—Rs. 5,000 or Rs. 6,225 including establishment and tools and plant charges surrendered from the grant for repairs to "Minor Works for which neither Capital nor Revenue Accounts are kept, Public Works Department," Nellore division, may be transferred to Agricultural works, River embankments, Major original works, to meet the demand of Rs. 5,000 for "raising Kistna river bank."

8. Rupees 1,000 surrendered from the grant for Minor original works, River embankments, Kistna Eastern division, may be transferred to meet in part the demand of Rs. 2,000 for the Moldevi drain in the Nellore division. The balance Rs. 1,000 or Rs. 1,245 including establishment and tools and plant charges may be met from the net surrender of Rs. 1,955 from the last 3 items of the Superintending Engineer's statement, leaving Rs. 710 which may be appropriated as shown in the margin to meet in part the demand for an additional grant of Rs. 5,000 for river conservancy, repairs, Kistna Western division, the necessity for which has not been explained.

	RS.
Repairs	570
Establishment	131
Tools and plant	9
Total ...	710

9. The modifications of allotments proposed in columns 7 and 8 of the statement may be sanctioned.

20th Oct. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

ORDER—dated 23rd October 1893, No. 873 I., Public Works.

The modifications of allotments recommended in the foregoing endorsement of the Chief Engineer for Irrigation are sanctioned.

2. The sum of Rs. 17,007 referred to in paragraph 4 of the above endorsement as available for transfer under "49. Capital Expenditure not charged to Revenue" is appropriated to the Periyár No. I division. The Superintendent of Works should report, at an early date, the distribution by component works of the additional amount now sanctioned.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 874 I., dated 23rd October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.

ENDORSEMENT—dated 23rd October 1893, No. 874 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 23rd.

Recd. *Encl.*

G.O., 23rd Oct. 1893, Nos. 873, 874 I.

OCTOBER.

Funds

Forwarding copy of Proceedings on certain modification of — in the II Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 11th August 1893, No. 111 C.E.

In obedience to paragraph 2 of G.O., No. 717 I. of 25th August 1892, I have the honour to submit four statements showing the financial working of the rice bazaars at Periyár and Thekady from October 1891 to March 1893 inclusive. These show a total net loss of Rs. 16,071–14–2, which I request that you will be good enough to ask Government to permit me to write off proportionately to the four principal works concerned, viz., (1) main dam, (2) right bank escape, (3) water-shed tunnel, and (4) water-shed cutting. The total payments for rice during the above period were Rupees 1,81,451, on which figure the loss was therefore about 8·8 per cent. Assuming the average working population of the two camps together to be 3,500 and the number of working days in the above to be 450, the loss represents an addition of less than 2 pies per day to each cooly's wages equivalent to an addition of about 3 per cent. to all rates, and it is certain that this has indirectly been more than repaid to Government by the command of labour, and the consequent saving of time, attained by the presence of a good supply of rice.

2. There were no irrecoverable debts on account of rice after the introduction of Mr. deWinton's rules printed with the Government Order under reference. The amount unrecovered on the 31st March 1893 was Rs. 14,132–5–10, which has all been since recovered with the exception of Rs. 402–6–1 which is the irrecoverable balance from the previous season. This irrecoverable balance is somewhat less than was anticipated in Mr. deWinton's No. 98 C.E., dated 5th August 1892, printed with the above Government Order.

Statement A shows the quantities, rates and costs of rice purchased and of rice sold month by month.

Statement B shows other charges debited or credited to rice account in addition to the debits and credits on account of advances to the supplier and recoveries from labourers.

Statement C is an abstract showing the net loss on rice and the net amount to be debited to works.

Statement D is a memorandum of all liabilities, outstandings, &c., on 31st March 1893.

3. It will be seen (Statement C) that the net total loss of Rs. 16,071–14–2 to be written off to works includes the sum of Rs. 5,178–8–9 which has already been written off to works, leaving a balance of Rs. 10,893–5–5 still to be written off.

4. Under my new system, sanctioned in G.O., No. 179 I., dated 23rd February 1893, and brought in on 1st April 1893, there will be no direct loss for the future on the bazaar. There may or may not be a proportionate rise in rates, but there can no longer be the possibility, however remote, that we may be paying more to ensure the rice supply than we are repaid by the extra command of labour obtained.

Office-note to the Examiner, Public Works Accounts, dated 24th August 1893, No. 2933 C.

For verification and return with any remarks he may think necessary.

2. The balance due to the suppliers of rice on 1st April 1893 seems to be Rupees 27,808-5-9 as shown below and not Rs. 27,887-5-9 as entered in the statement D:—

	RS.	A.	P.
Balance due on 1st October 1891—*vide* last page of the enclosures of letter No. 17 C.E., dated 9th April 1892, from the Superintendent of Works	4,009	4	1
Value of rice purchased between October 1891 and March 1893	1,81,451	3	6
Total ...	1,85,460	7	7
Deduct payments made ...	1,57,652	1	10
Balance on 1st April 1893 ...	27,808	5	9

Office-note from the Examiner, Public Works Accounts, dated Madras, 16th September 1893, No. 991-C.

[Your office-note No. 2933 C., dated 24th August 1893.]

Verified and returned with the following remarks:—

I. *Statement A—(a) Column* 2.—The quantity of rice credited in the account is less than that paid for as per suppliers' bills by 1,430 measures—see statement below:—

Item No.	Month.	C.O. voucher number.	Number of measures paid for as per bill.	Number of measures brought to account.	Difference.
1	November 1891	..	..	1,175	1,175
2	Do.	243	130	..	130
3	Do.	244	150	..	150
4	Do.	245	70	..	70
5	December 1891	250	78	..	78
6	January 1892	285	700	..	700
7	Do.	..	142	..	142
8	April 1892	200 of July 1892 ..	10,935	10,735	200
9	Do.		10,274	10,054	220
10	August 1892	286 of September 1892	7,699	7,690	9
11	Do.		16,181	16,086	95
12	Do.	211 of August 1892.	432	..	432
13	September 1892	148 of May 1893 ..	36,666	36,381	285
14	November 1892		19,530	19,520	10
15	Do.		10,963	10,930	33
16	December 1892		25,952	25,901	51
				Total difference to be accounted for ..	1,430

(*b*) *Column* 6, *Rate at which rice was sold.*—In two cases this has not been given, and the "cost" therefore is not susceptible of check.

(*c*) *Column* 7, "*Cost*" *of rice sold.*—In six cases the amounts entered are not arithmetically correct—*vide* pencil corrections. The proceeds should apparently be Rs. 25-3-9 more than the amount entered in the statement.

II. *Statement B.*—Verified. A few clerical errors found in checking have been rectified.

III. *Statement C.*—Items 2, 5 and 7 have not been verified as they do not admit of being checked from the divisional accounts.

IV. *Statement D.*—First item on the debtor side. With reference to paragraph 2 of your office-note, the opening balance on 1st October 1891 cannot be checked by this office in the absence of the previous statements.

2. Paragraph 3 of Superintendent of Works' letter has been verified.

No. 3169 C.

Forwarded to the Superintendent of Works, No. I Periyár Division, who is requested to explain the cause of the differences pointed out by the Examiner of Public Works Accounts and carry out necessary corrections in the accompanying statements received with his letter No. 111 C.E., dated 11th August 1893.

23rd September 1893.

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 10th October 1893, No. 156 C.E.

With reference to your No. 3169 C., dated 23rd September 1893, requesting explanation of certain differences pointed out by the Examiner, Public Works Accounts, in the rice accounts, I have the honour to state as follows:—

With reference to Examiner's paragraph 1 (*a*).—The quantity 1,175 measures less, shown against item 1 in the Examiner's statement, is made up of the following:—

	MEASURES.
Item 2 of the statement	130
" 3 "	150
" 4 "	70
" 6 "	700
" 7 "	142
	1,192
Less measures deducted from supplier as shown in Bill C.O.V. No. 285 of January 1892	$16\frac{1}{4}$
	1,175

Item 5 *of Examiner's statement.*—The 78 measures in question were received in September 1891 but only paid for in December 1891.

Items 8 *to* 13 *of Examiner's statement.*—Difference 1,241 measures; this is due to the supplier being allowed extra quantity on certain consignments, as explained further on; this extra quantity was deducted from the quantity billed for and the net entered in the statement.

The total quantities as billed for have now been entered in statement A in column "Rice purchased" and shown as wastage in column "Rice sold."

Items 14 *to* 16 *of Examiner's statement.*—Difference 94 measures, as explained below, have now been entered in statement A column "Rice purchased" and shown as wastage in column "Rice sold."

Items 8 to 13 above: the supplier was allowed one measure per bag on certain consignments; as it was subsequently found out that the bazaar lascar, who measured up the rice when received from the supplier, had not measured the rice correctly and had done so in such a way as to cause a loss to the supplier, this quantity though billed for was not brought on the books.

The high wastage on 14 to 16 is due to the same lascar giving over-measurements to purchasers.

2. *With reference to Examiner's paragraph* 1 (*b*).—This apparently refers to the "Total sales" in December 1892 and January 1893. The rice was sold at different rates, as detailed in the statement, the quantities and cost at each rate being given; hence rate was not entered in the statement against the total sales for the two months.

3. *Examiner's paragraph* 1 (*c*).—The amounts entered in column 7 of the statement show the amounts of the actual sales of the month. The rates for October and November 1891 (when the bazaar was just put in good working order) are the average rates for the months; for instance, $142\frac{1}{2}$ measures of rice was purchased locally for Rs. 23 (C.O.V. No. 285 of January 1892) and was sold for the same amount but included in the rate of 5 measures per rupee.

The other differences referred to are trifling, viz. :—

	RS.	A.	P.
April 1892	0	4	0
June "	0	0	9
September 1892	0	0	10
November "	0	0	9

and are due to fractions of a measure in many cases not being taken into accounts in the quantities sold. None of the above differences as explained affect the total loss on rice which still remains as reported.

Your memorandum under reference with enclosures are herewith returned.

ORDER—dated 24th October 1893, No. 875 I., Public Works.

The loss sustained from 1st October 1891 to end of March 1893 on the Government rice bazaar at Periyár amounted to Rupees 16,071-14-2 as shown in the margin. Deducting the sum of Rs. 5,178-8-9 which has already been written off to works as reported by the Superintendent of Works, the balance of Rs. 10,893-5-5 will now be debited to the four principal works concerned in proportion to the outlay incurred on them.

	RS.	A.	P.	RS.	A.	P.
Value of rice in hand on 1st October 1891				2,490	2	0
Value of rice purchased				1,81,451	3	6
Total ...				1,83,941	5	6
Deduct value of rice sold ...				1,66,357	8	9
Loss ...				17,583	12	9
Outstandings	14,132	5	10			
Amount recoverable	13,729	15	9			
Amount irrecoverable				402	6	1
Establishment and other charges incurred				1,592	14	10
Arrears due				65	2	9
Loss on sales of rice purchased by the Supervisor, Main dam				41	13	9
Total ..				19,686	2	2
Deduct value of gunny-bags sold ...	3,601	4	0			
In hand	13	0	0			
				3,614	4	0
Net loss				16,071	14	2

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Superintendent of Works, No. I Periyár Division.
" Examiner, Public Works Accounts.
" Chief Engineer for Irrigation.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 24th.

Recd. *Encl.*

G.O., 24th Oct. 1893, No. 875 I.

OCTOBER.

Government Rice Bazaar at Periyar

Directing that the balance of loss of Rs. 10,893-5-5 sustained to the end of March 1893 on the — be debited to the four principal works concerned in proportion to the outlay incurred on them.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Note by the Chief Engineer for Irrigation.

With his office-note No. 1371 D., dated 14th October 1893, the Examiner of Public Works Accounts has forwarded estimates of revenue and expenditure in the Irrigation Branch for the current year.

2. He suggests that the estimate of direct receipts from Major works be fixed at Rs. 2,80,000, the actuals in each of the three preceding years having exceeded the sum of Rs. 2,70,000 set down as the estimate for the current year. The Examiner's estimate may be adopted.

3. The budget estimate of direct receipts from Minor works and Navigation may be increased from Rs. 1,55,000 to Rs. 1,60,000 and not to Rs. 1,70,000 as estimated by the Examiner, as the realizations during the preceding three years have never reached the high figure suggested by him, but have only slightly exceeded Rs. 1,60,000 in each of the previous two years.

4. The Examiner concludes from the expenditure already incurred that the grants under "43. Minor works and Navigation" Provincial and Local, and under "49. Capital expenditure not charged to Revenue" will be fully utilized, but that under "35. Protective Irrigation works" and "42. Major works (working expenses)" unless strenuous efforts are made to push on work more vigorously than has been done during the first five months of this year, there will probably be a lapse under these heads.

5. The progress of works on the Rushikulya project has been hindered by constant rain, and, unless the season hereafter is more favorable for work, some reduction of the grant may be necessary. The Superintending Engineer, I Circle, should see that every endeavour is made to fully utilize the grant, and if this is not possible, to surrender in time such portion of it as cannot be spent.

6. No action is needed with regard to the apprehended short outlay on working expenses, it being highly desirable to keep down expenditure under this head as much as possible. Any surrenders from existing grants could probably be utilized in the Gudiváda division where additional funds are required. Every application for increase of grants under this head is now being vigorously scrutinized in view to prevent undue expenditure.

7. The estimates for the ensuing official year have not yet been fixed and the amounts entered are only rough approximations. The amounts shown under "49. Capital expenditure not charged to Revenue" represent in the case of the Gódávari delta, Sangam anicut and Cauvery delta systems, the unexpended balances of the sanctioned estimates, those entered against the Kistna delta and Periyár projects are equivalent to the budget estimates of the current year, while the amount required for the Kalingaroyen channel is what has been applied for by the Superintending Engineer, IV Circle, to commence the project works.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

MADRAS PRESIDENCY.

Six months' estimate for the year 1893–94.

Irrigation Branch—Table I.

Particulars.	Actuals, 1892–93.				Budget estimate, 1893–94.			
	Imperial.	Provincial.	Incorporated local.	Total.	Imperial.	Provincial.	Incorporated local.	Total.
1	2	3	4	5	6	7	8	9
Revenue.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
XXIX. Major works. Direct receipts	3,14,284	..	..	3,14,284	2,70,000	..	..	2,70,000
XXIX. Major works. Portion of land revenue due to irrigation	50,67,739	..	..	50,67,739	60,10,000	..	..	60,10,000
XXX. Minor works and Navigation ..	..	1,60,448	..	1,60,448	..	1,55,000	..	1,55,000
Expenditure.								
35. Construction of Protective Irrigation works	4,45,743	..	..	4,45,743	4,50,000	..	..	4,50,000
42. Major works. Working expenses ..	12,37,060	..	..	12,37,060	12,05,000	..	..	12,05,000
42. Major works. Interest on debt ..	21,96,812	..	..	21,96,812	..	..	..	..
43. Minor works and Navigation	..	33,31,884	18,878	33,50,762	..	32,00,000	28,000	32,28,000
49. Irrigation works, Capital expenditure not charged against revenue	16,43,147	..	..	16,43,147	17,00,000	..	..	17,00,000

Particulars.	Six months' estimate, 1893–94.				Budget estimate, 1894–95.			
	Imperial.	Provincial.	Incorporated local.	Total.	Imperial.	Provincial.	Incorporated local.	Total.
	10	11	12	13	14	15	16	17
Revenue.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
XXIX. Major works. Direct receipts	2,80,000	..	..	2,80,000	..	..	..	2,80,000
XXIX. Major works. Portion of land revenue due to irrigation	60,10,000	..	..	60,10,000	60,10,000	..	..	60,10,000
XXX. Minor works and Navigation ..	..	1,60,000	..	1,60,000	..	1,60,000	..	1,60,000
Expenditure.								
35. Construction of Protective Irrigation works	4,50,000	..	..	4,50,000	4,50,000	..	..	4,50,000
42. Major works. Working expenses ..	11,68,347	..	..	11,68,347	11,68,000	..	..	11,68,000
42. Major works. Interest on debt ..	22,64,169	..	..	22,64,169	23,02,429	..	..	23,02,429
43. Minor works and Navigation	..	32,07,025	32,501	32,39,526	..	32,00,000	30,000	32,30,000
49. Irrigation works, Capital expenditure not charged against revenue	17,00,000	..	..	17,00,000	19,13,000	..	..	19,13,000

MADRAS,
14th October 1893.

(Signed) I. S. SHERLOCK-HUBBARD,
Examiner of P. W. Accounts.

Six months' estimate for the year 1893–94.

Irrigation Branch—Table II.

Particulars.	Actuals, 1892–93.	Budget estimate, 1893–94.	Six months' estimate, 1893–94.	Budget estimate, 1894–95.
Capital expenditure on Public Works not charged against revenue—	RS.	RS.	RS.	RS.
In India—				
Gódávari delta system	1,647	..	6,107	22,000
Kistna delta system	3,06,594	4,71,000	4,03,313	4,71,000
Cauvery delta system	..	..	3,230	2,500
Srívaikuntam anicut system	..	..	4,800	..
Pennár anicut system	69	..	3,198	..
Sangam anicut system	18,716	54,000	58,595	56,000
Kurnool canal	— 235	..	..	..
Barur tank project	2,798	..	..	..
Periyár project	13,13,558	11,75,000	12,22,757	11,75,000
Kalingaroyen channel	..	..	..	1,86,500
Total ..	16,43,147	17,00,000	17,00,000	19,13,000

MADRAS PRESIDENCY.

Six months' estimate for the year 1893-94—cont.

Irrigation Branch—Table II—*cont.*

Particulars.	Actuals, 1892-93.	Budget estimate, 1893-94.	Six months' estimate 1893-94.	Budget estimate, 1894-95.
Capital expenditure on Public Works not charged against revenue—*cont.*	RS.	RS.	RS.	RS.
In England—				
Gódávari delta system	..	..	..	..
Kistna delta system	..	..	..	..
Cauvery delta system	..	..	..	..
Srívaikuntam anicut system	..	..	..	..
Pennér anicut spstem	..	..	..	..
Sangam anicut system	..	..	..	..
Kurnool canal	..	..	..	..
Barur tank	..	..	..	..
Periyár project	..	..	..	..
Total ..	..	..	..	..
Interest payable by Provincial Government to the Imperial treasury—				
Gódávari delta system	4,36,408	..	4,36,563	4,37,003
Kistna delta system	3,95,637	..	4,09,835	4,19,255
Cauvery delta system	66,242	..	66,267	66,317
Srívaikuntam anicut system	54,041	..	54,137	54,137
Pennér anicut system	65,316	..	65,381	65,381
Sangam anicut system	1,20,229	..	1,21,775	1,22,895
Kurnool canal	8,66,119	..	8,66,609	8,66,609
Barur tank	15,805	..	15,861	15,861
Periyár project	1,77,016	..	2,27,741	2,51,241
Kalingaroyen channel	..	..	..	3,730
Total ..	21,96,812	..	22,64,169	23,02,429

MADRAS,
14th October 1893.

(Signed) I. S. SHERLOCK-HUBBARD,
Examiner of P. W. Accounts.

ORDER—dated 24th October 1893, No. 876 I., Public Works.

The statements showing the six months' estimates of receipts and expenditure in the Irrigation Branch for 1893-94 and the rough estimate for 1894-95 will be submitted to the Government of India.

[Here enter No. 877 I., dated 24th October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineers.
" the Superintendent of Works, No. I Periyár Division.
" the Examiner, Public Works Accounts.
" the Revenue Department.

ENDORSEMENT—dated 24th October 1893, No. 877 I., Public Works.

Forwarded accordingly.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 24th.

Recd. *Encl.*

G.O., 24th Oct. 1893, Nos. 876 I., 877 I.

OCTOBER.

Six Months' Estimates

Forwarding statements showing the — of receipts and expenditure in the Irrigation Branch for 1893-94 and the rough estimate for 1894-95.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 4th October 1893, No. 950 T.C.

In continuation of this office No. 878 T.C. of the 21st ultimo, I have the honour to request that the following modifications of allotments may be sanctioned at an early date :—

Item number.	—	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.	
			Reduction.	Increase.	Reduction.	Increase.
	PROVINCIAL IRRIGATION.	RS.	RS.	RS.	RS.	RS.
	43. MINOR WORKS AND NAVIGATION.					
	MINOR WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.					
	Revenue Account.					
	Marudur Anicut System.					
	Tinnevelly Division.					
1	Maintenance and repairs	8,504	504	..	504	..
	MINOR WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT, P.W.D.					
	Original Works.					
	Major.					
	Tinnevelly Division.					
2	Improving Gengaikondan Sirukulam tank, estimate Rs. 5,700 sanctioned in G.O., No. 394 I., dated 2nd May 1893	3,000	500	..	500	..
3	Improving Peranjeri channel, estimate Rs. 3,600 sanctioned in G.O., No. 982 I., dated 21st November 1892	2,000	..	1,600	..	1,600
4	Repairs, lump sum	40,000	..	2,500	..	2,500
	Madura Division.					
5	Minor works, lump sum	5,000	..	1,000	..	1,000
6	Repairs, lump sum	20,000	1,000	..	1,000	..
	TANK RESTORATION SCHEME.					
	Original Works.					
	Major.					
	Tinnevelly Division.					
7	No. 5 Alankulam of Maharajapuram—Improving the —, estimate Rs. 3,660 sanctioned by the Chief Engineer for Irrigation (Tank Restoration Scheme) in register No. 11 T./T. of 1893-94	..	..	82	..	82
	Madura Division.					
8	No. 69 Anuppavady Periakommoi and channel—Raising and strengthening the tank and channel bunds, estimate Rs. 8,970 sanctioned by the Chief Engineer for Irrigation (Tank Restoration Scheme) in register No. 1 T./M. of 1892-93	3,000	..	3,000	..	3,000
9	Minor works, lump sum	20,000	3,000	..	3,000	..
	Tinnevelly Division.					
10	Minor works, lump sum	11,675	82	..	82	..
	AGRICULTURAL WORKS.					
	River Embankments.					
	Tinnevelly Division.					
11	Minor works, lump sum	300	300	..	300	..
	Total ..	..	5,386	8,182	5,386	8,182

2. *Items* 1, 2 *and* 11.—Surrendered to meet part of the demand for item 3, for which the existing grant has already been worked out.

Item 4.—Required to meet the liabilities incurred, viz., Rs. 500, and the outlay proposed on repairs to Sennaneri tank, &c., which should be put in hand before the rains set in.

Item 5.—Works under this head are making satisfactory progress; the amount required can be met from the surrender in item 6.

Item 7.—Allotment required to meet the outlay already incurred and can be met from item No. 10.

Item 8.—It is reported that the work is being pushed on rapidly, and the additional allotment, which is necessary, may be met from item 9.

ORDER—dated 25th October 1893, No. 879 I., Public Works.

The following transfers of funds are sanctioned:—

Irrigation.

43. Minor Works and Navigation.

From

Minor Works for which Capital and Revenue Accounts are kept.
Maradur Anicut System.
Reveue Account.
Tinnevelly Division.

	RS.	RS.
Maintenance and repairs ...	504	
Establishment	116	
		620

Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Ordinary Works.
Major Original Works.

	RS.	RS.
Improving Gengaikondan Sirukulam	500	
		500

Madura Division.

	RS.	RS.
Repairs, lump sum	1,000	
		1,000

Agricultural Works.
River Embankments.
Tinnevelly Division.

	RS.	RS.
Minor original works, lump sum ...	300	
Establishment	69	
Tools and plant	5	
		374

Reserve under "43. Minor Works and Navigation."

	RS.	RS.
Works	2,802	
Establishment	644	
Tools and plant	42	
		3,488
Total ...		5,982

To

Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Ordinary Works.
Tinnevelly Division.

	RS.
Improving Peranjeri channel ...	1,600
Repairs, lump sum	2,500
Madura Division.	
Minor original works, lump sum ...	1,000
	6,100
Establishment	828
Tools and plant	54
Total ...	5,982

Madura Division.

Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Tank Restoration Works.

From	RS.	To	RS.
Minor works, lump sum	3,000	Original Works, Major No. 69. Anuppavady Periakommoi and channel. Raising and strengthening the tank and channel bunds	3,000

2. The amount required for item 7 being less than Rs. 500, no formal appropriation is necessary to meet the outlay already incurred. The existing grant for item 10 as increased in G.O., No. 832 I., dated 25th September 1893, is Rs. 11,675.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 25th.

Recd. *Encl.*

G.O., 25th Oct. 1893, No. 879 I.

OCTOBER.

Funds

Certain transfers of — in the VI Circle, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 22nd September 1893, No. 654 G.N.

I have the honour to bring to your notice that the Executive Engineer, Rushikulya division, reports that much difficulty is experienced in obtaining labour for Gulleri channel works, and suggests to take over all work and allotments on river bank repairs from Goomsur to Gulleri from the Executive Engineer, Ganjám division, as the labour constantly leaves for easier work. I have therefore, pending your approval, issued necessary orders to the transfer of the following sanctioned allotments from the Ganjám division to the Rushikulya division with the object of forcing labour on to the Gulleri channel :—

	Allotment. RS.
Agricultural original works—Lump sum	1,000
" repairs	2,000

Rupees 2,000 under repairs is part of the lump sum Rs. 5,000 sanctioned for the Ganjám division. Certain estimates already sanctioned in the Ganjám division, to work out the above grants, have been transferred to the Rushikulya division.

ORDER—dated 25th October 1893, No. 880 I., Public Works.

The following transfers of funds are sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Agricultural Works.
River Embankments.

From Ganjám Division.	RS.	*To* Rushikulya Division.	RS.
Original works	1,000	Original works	1,000
Repairs	2,000	Repairs	2,000
Total ...	3,000	Total ...	3,000

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 25th.

Recd. *Encl.*

G.O., 25th Oct. 1893, No. 880 I.

OCTOBER.

Funds

Sanctioning certain transfers of — in the I Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

IV Circle.

Statement showing the surrenders and demands under Irrigation in 1893-94,

[*Statement.*

STATEMENT showing the surrenders and demands under Irrigation in 1893–94.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of March 1893.	Outlay in the current year up to August 1893.	Balance of estimate.	Existing grant for 1893–94.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			RS.		RS.	RS.	RS.	RS.	RS.	RS.	
		43. MINOR WORKS AND NAVIGATION.									
		Works for which Capital and Revenue Accounts are kept.									
		Capital.									
		I. Works.									
		Poiney System.									
	1	Improvements to the Poiney Western Main channel.	3,840	41 / 1893–94.	2,596	445	799	..	3,840	3,840	Of this Rs. 3,840, Rs. 1,244 only is required to meet the outlay in the current year. The balance Rs. 2,596, outlay of last year, under extension and improvements has to be transferred to capital this year and a formal sanction to admit this debit without grant is required.
		Establishment	..	..	..	..	..	..	883	883	
		Total ..	..		..	..	..	..	4,723	4,723	
		Cheyar Anicut System.									
	2	Widening the existing aqueduct in the Cheyar Main channel.	4,400	101 / 1893–94.	100	2,727	1,573	..	4,400	4,400	
	3	Investigation and preparation of estimates for improving distributaries of the Cheyar anicut system and Elathur anicut channels.	700 2,000	210 of 1892–93 G.O., No. 2206 W. of 29th Aug. 1893.	..	..	..	..	500	500	
									4,900	4,900	
		Establishment	..	..	..	..	..	..	1,127	1,127	
		Total ..	..		..	..	..	..	6,027	6,027	
		1-B. Revenue Extensions and Improvements to Cheyar Anicut.									
	4	Widening the existing aqueduct in the Cheyar anicut channel.	4,400	101 / 1893–94	100	..	..	4,400	4,500	— 100	To meet demands on items 1 and 2 as the estimates have since been sanctioned under open Capital Account.
		Establishment	..	..	..	..	..	1,012	— 1,035	— 23	
		Total ..	..		..	..	..	5,412	5,535	— 123	
		Poiney Anicut.									
Arcot.	5	Improvements to the Poiney Western Main channel.	3,840	41 / 1893–94	2,596	..	..	1,244	— 3,840	— 2,596	

North

	Establishment	..		..	..	..	286	— 883	— 597	
	Total ..	..		..	..	..	1,530	— 4,723	— 3,193	
	43. Minor Works and Navigation.									
	Works for which neither Capital nor Revenue Accounts are kept.									
	Original Works.									
	Major.									
6	Repairing and improving the Lathur tank ..	8,500	54 / 1893–94	2,526	2,835	3,139	..	5,974	5,974	This revised estimate has been sanctioned as a Major Work in lieu of the one sanctioned under Repairs and Minor Original Works in registered Nos. 142 to 146 of 1891–92.
	Tank Restoration Works.									
	Original.									
	Major.									
7	Agaram tank and channel improvements ..	4,620	52 T. / 1892–93	..	1,545	3,075	..	4,500	4,500	
	Original Works.									
	Minor.									
8	Lump sum	..	..	..	..	..	20,000	3,869	15,226	To meet demands.
	Repairs.									
9	Lump sum	..	..	..	..	..	25,000	7,000	18,000	On items 3, 6 and 7.

No. 249/E.I.

Copy forwarded to the Chief Engineer for Irrigation with a request that he will be good enough to obtain the sanction of Government to the surrenders and demands of grants shown in the above statement.

(Signed) A. W. SMART, Lt.-Col., R.E.,
Superintending Engineer, IV Circle.

21st September 1893.

Submitted to Government.

2. As the surrenders proposed by the Superintending Engineer from items 4 and 5 did not include the reduction of outlay incurred up to end of last year, the necessary corrections have been made in the statement. The amount required for item 1 may be met from the surrender from item 5. For item 6 the Superintending Engineer applied for Rs. 8,500. Pending receipt of information as to the distribution of the expenditure of Rs. 2,526 incurred up to end of last year between "Original Works" and "Repairs," the demand has been reduced to Rs. 5,974, the unexpended balance of the revised estimate. This sum *plus* the percentages for establishment and tools and plant amounts to Rs. 7,438 and may be provided by transfer from the surrender from item 9. The balance, Rs. 1,026, of this surrender, added to the surrender from item 8 as altered in this office from Rs. 6,300 to Rs. 3,869, amounts to Rs. 4,895, from which Rs. 4,500 required for item 7 may be provided, leaving a balance of Rs. 395 or Rs. 492 including establishment and tools and plant charges. This amount together with the surrender from item 4 may be transferred to meet the demands for items 2 and 3.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

Order—dated 25th October 1893, No. 881 I., Public Works.

The modifications of allotments recommended by the Chief Engineer for Irrigation are sanctioned.

2. The Superintending Engineer, IV Circle, will report, at an early date, the distribution between "Original Works" and "Repairs" of the outlay reported to have been incurred on item 6 up to end of last year.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 25th.

Recd. *Encl.*

G.O., 25th Oct. 1893, No. 881 I.

OCTOBER.

Funds

Certain modifications of allotments recommended by the Chief Engineer for Irrigation in the IV Circle, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, through the Examiner, Public Works Accounts, dated Chepâk, 21st September 1893, No. 308 E.I.

I have the honour to submit herewith, for sanction of Government, a revised estimate in the form of a completion report for Rs. 4,010 for improving Pullagacherry tank in Kullakurchi taluk of the South Arcot division.

2. The original estimate of Rs. 3,310 was sanctioned in G.O., No. 380 I., dated 28th April 1891. The cause of excess is explained in the completion report.

Endorsement by the Examiner of Public Works Accounts, dated 28th September 1893, No. 1151 D.

Forwarded.

2. The outlay in the completion report has been checked and found correct.

ORDER—dated 25th October 1893, No. 882 I., Public Works.

The Examiner of Public Works Accounts is authorised to admit the expenditure of Rs. 4,009–14–0 shown in the completion report forwarded by the Superintending Engineer, V Circle, to have been incurred on the improvement of the Pullagacherry tank in the South Arcot division.

2. This sanction is registered as No. 140 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle,
with one enclosure.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 25th.

Recd. *Encl.*

G.O., 25th Oct. 1893, No. 882 I.

OCTOBER.

Expenditure

The Examiner, Public Works Accounts, authorised to admit the — of Rs. 4,009-14-0 incurred on the improvement of the Pallagacherry tank in the South Arcot division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 28th September 1893, No. 921 T.-C.

With reference to your No. 32 T.C. of the 21st instant regarding the balance of the grant for Nandiar channel extension, I have the honour to state that, if orders are not given shortly to go on with the work, or if the estimate is not to be sanctioned at an early date, it will be better to surrender the balance.

2. The change of design for the Manodai crossing is likely to cause some delay, as the materials and fittings for the iron pipe will have to be got from England; but I am not prepared to give up the amount to be transferred to any other circle.

3. The amount now to the credit of the work is Rs. 7,700; deducting from this Rs. 2,000, being the outlay already incurred and liabilities to be settled, the balance of the grant comes to Rs. 5,700. I would recommend the appropriation of this sum to the following works in this circle:—

43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept.
Trichinopoly Division.

	RS.
1. Revetting portion of the Arasangudy Karamuthurkulam ...	750
2. Minor original works, lump sum	1,000
3. Repairs, lump sum	1,000
	2,750

Tinnevelly Division.

	RS.
4. Vembakottai Periyakulam improvements	1,481
Agricultural Works, River Embankments.	
5. Tambraparni left bank below S.A.	1,469
	2,950
Total ...	5,700

4. The reductions in the grants for items 1, 2 and 3 above, proposed in this office No. 878 T.C. of the 21st September 1893, should be cancelled, and the amount required for the Mallipadi tank, Rs. 2,750, transferred from the sum now available; but if it is too late to do this, reappropriation of the amounts entered against these items should be sanctioned.

5. The sum now applied for for item 4 is in addition to the reappropriation proposed in this office No. 460 T.N. of the 10th September 1893.

6. If the amount applied for for item 5 in this office No. 460 T.N. of the 10th September 1893 is not available, it may be now transferred from the balance of the grant in question.

ORDER—dated 26th October 1893, No. 883 I., Public Works.

The appropriations proposed in paragraph 3 of the foregoing letter from the Superintending Engineer, VI Circle, for items 1 to 4, aggregating Rs. 4,231, are sanctioned from the existing grant of Rs. 7,700 for the Nandiar channel extension, which will then be reduced to Rs. 3,469. The amount required for item 5 has already been sanctioned in G.O., No. 832 I., dated 25th September 1893.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation,
" Superintending Engineer, VI Circle,
" Examiner, Public Works Accounts,
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

G.O., 26th Oct. 1893, No. 883 I.

OCTOBER.

Funds

Sanctioning certain modification of — in VI Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 26th September 1893, No. 145 C.E.

have the honour to forward herewith the completion statement for August 1893 with explanations for differences, and to request that the sanction of Government may be obtained to the same and the statement forwarded to the Examiner, Public Works Accounts, for acceptance.

(1) & (2) Excess due to extra work found neçessary on each, not foreseen when estimates were prepared.

(3) Excess due to "fencing around building" and "making a double plank partition wall" to separate male from female prisoners found necessary.

(4) Excess due to extra cost of excavating foundations and filling in and levelling site, the cost of explosives for blasting rock at site being Rs. 50.

The cost for "bamboo tatties" was also a little in excess of the cost estimated.

(5) & (6) Some of the clearing had to be done over again as the growth of shrub and grass is very quick; also some new camps were made so as to minimize the effects of fever and contagious disease which necessitated more clearing not provided for in the estimate.

(7) Excess trifling and may be passed.

The unspent amounts of the other works are not required.

The net differences on the several heads are—

	RS.
4. Buildings, savings	524
5. Miscellaneous, savings	242
6. Maintenance, excess	— 891
Net excess ...	— 125

ENCLOSURE.

Estimate. No.	Estimate. Date.	Name of work.	Amount of estimate.	Outlay (to nearest rupee).	Difference.
	2	3	4	5	6
		4. Buildings.	RS.	RS.	RS.
106	1892–93	Constructing stable to Superintendent of Works' quarters, Periyár.	210	144	66
100	,,	Constructing two new fitters' quarters, Periyár	140	141	— 1
4	,,	Annual repairs to store-shed, Thekady	42	5	37
47	,,	Constructing four new clerks' quarters, Thekady	1,240	1,399	(1)— 159
66	,,	Improvements to overseers' quarters, No. II Thekady ..	210	369	(2)— 159
38	,,	Constructing Sub-Magistrate's Court, office and Police station, Periyár	2,180	2,247	(3)— 67
2	,,	Improvements and annual repairs to Apothecary's quarters, Periyár	450	327	123

Estimate.		Name of work.	Amount of estimate.	Outlay (to nearest rupee).	Difference.
No.	Date.				
1	2	3	4	5	6
		4. *Buildings*—cont.	RS.	RS.	RS.
141	1892-93	Improving old well south of tennis court, Periyár	220	149	71
64	"	Improvements to hospital at Periyár	930	903	27
67	"	Constructing new rice bazaar, Periyár	2,800	2,181	619
39	"	Constructing Sub-Magistrate's quarters, Periyár	1,360	1,367	— 7
125	"	Constructing quarters for steam launch drivers and lascars ..	190	191	— 1
46	"	Constructing Police lines, Periyár	2,140	2,263	(4)— 123
140	"	Re-roofing and repairing old fitters' quarters lately destroyed by fire	550	532	18
40	"	Annual repairs to hospital, Periyár	480	428	52
20	1893-94	Fencing around old rest-house, Periyár	45	40	5
		5. *Miscellaneous.*			
94	1892-93	Constructing a culvert under tram line of road quarry ..	870	628	242
88	1893-94	Taking photographs of Periyár Works	300	300	..
		6. *Maintenance.*			
76	1892-93	Clearing jungle around Periyár camp	480	833	(5)— 353
91	"	Clearing jungle around Thekady camp	800	1,201	(6)— 401
43	1893-94	Maintenance of Thekady-Periyár road	14,300	14,437	(7)— 137

Office-note to the Examiner of Public Works Accounts, dated 7th October 1893, No. 3295 C.
" from " " " 13th " " " 1353 D.

ORDER—dated 26th October 1893, No. 884 I., Public Works.

The Examiner of Public Works Accounts is authorised to pass the expenditure incurred on the works detailed in the completion statement for August 1893, the net excess of Rs. 148 being met from the balance of the amount reserved for unforeseen works of the Periyár project, which will then be reduced to Rs. 21,532.

2. This sanction is registered as No. 142 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintendent of Works, No. I Periyár Project.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

G.O., 26th Oct. 1893, No. 884 I.

OCTOBER.

Periyar Project

The Examiner authorised to pass the excess expenditure incurred on certain works detailed in the completion statement for August 1893 of No. I Periyár Division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 12th October 1893, No. 160 C.E.

I have the honour to forward herewith an estimate, amounting to Rs. 4,512, for Police escort charges to accompany treasure from Periyakulam to Periyár for four years from November 1892, and to request that you will be good enough to accord sanction to the same.

ORDER—dated 26th October 1893, No. 885 I., Public Works.

The following estimate is sanctioned from the balance of the amount reserved for unforeseen works of the Periyár project, which will then be reduced to Rs. 21,680:—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
1. Head Works.
5. Miscellaneous.

	RS.
Police escort charges for four years commencing from November 1892, estimate...	4,512

2. This sanction is registered as No. 141 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintendent of Works, No. I Periyár Division, with one estimate.
" Examiner of Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

G.O., 26th Oct. 1893, No. 885 I.

OCTOBER.

Police Escort Charges

Estimate of Rs. 4,512 for — of No. I Periyár Division for 4 years commencing from November 1892, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

No. 149 I.

Note by the Chief Engineer for Irrigation.

The drawings of the head works, as actually carried out, of the Productive Public Works Systems in this Presidency, referred to in paragraph 2 of G.Os., No. 980 I., dated 30th November 1883, and No. 502 I., dated 27th May 1884, have now been lithographed and comprise the following :—

Description of drawings.	Gódávari Delta System.	Kistna Delta System.	Southern Delta of the Pennér.	Cauvery Delta System.	Srívaikuntam Anicut System.
Sketch map ..	1	1	1	1	1
Plan showing the position of the anicut and head works together with chart of the river for one mile above and below the anicut ..	1	1	1	2	1
Plan of anicut ..	4	1	1	2	1
Do. of under sluices ..	3	2	2	..	..
Do. of head sluices ..	3	2	2	2	2
Plans of shutters and screw-gearings for head and under sluices ..	1	2	..	5	..
Plan of regulating dam ..	..	..	..	1	..
Do. of head lock ..	3	1	..	..	..
Do. of shutter for lock ..	1	..	..	..	..
Do. of bridge ..	..	1	..	..	..
Do. of calingulah and bridge ..	..	..	..	1	..
Diagram showing the rise and fall of the river ..	1	1	1	1	1
Total ..	18	12	8	15	6
Total number of drawings ..	59				

These have been put up in portfolios, of which 55 are now available for distribution excluding the 12 which have already been supplied to the College of Engineering.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

20th Oct. 1893.

Order—dated 26th October 1893, No. 888 I., Public Works.

The portfolios containing the lithographed drawings of the head works of the Productive Public Works Systems in this Presidency will be distributed as follows :—

	Number of copies.
Superintending Engineer, I Circle ...	7
Do. II " ...	6
Do. III " ...	5
Do. IV " ...	6
Do. V " ...	6
Do. VI " ...	6
Superintendent of Works, Periyár, No. I Division ...	1
Superintending Engineer, Irrigation Circle, Upper Burmah ...	1
Chief Engineer, Public Works Department ...	1
Chief Engineer for Irrigation ...	11

2. Three copies of the portfolio will be sent to the Superintendent, Government Press, to be kept for sale at Rs. 60 a copy.

3. A copy will also be forwarded to the President, Central Irrigation League, Victoria, and the Colonial Secretary to the Government of New South Wales.

4. Ordered that the following letters be sent.

[Here enter Nos. 889 and 890 I., dated 26th October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To Superintending Engineers.
,, the Superintendent of Works, Periyár, No. I Division.
,, the Superintending Engineer, Irrigation Circle, Upper Burmah.
,, the Chief Engineer, Public Works Department.
,, the Chief Engineer for Irrigation.
,, the Principal, College of Civil Engineering.
,, the Superintendent, Government Press.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

G.O., 26th Oct. 1893, No. 888 I.

OCTOBER.

Drawings

Distribution of the portfolios containing lithographed — of the head works of the Productive Public Works Systems in this Presidency.

PUBLIC WORKS DEPARTMENT.

Irrigation.

LETTER—from

LT.-COL. R. R. E. DRAKE-BROCKMAN, R.E.,
Acting Secretary to the Government of Madras,
Public Works Department,

To

THE PRESIDENT, CENTRAL IRRIGATION LEAGUE,
VICTORIA.

SIR,

With reference to paragraph 2 of G.O., No. 980 I., dated 20th November 1883, forwarded with my letter No. 1043 I., dated 14th December 1883, I am directed to forward a portfolio containing lithographed drawings of the head works, as carried out, of the Productive Public Works Systems of this Presidency and request that its receipt may be acknowledged.

I have the honour to be,
Sir,
Your most obedient servant,

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

FORT ST. GEORGE,
26th October 1893.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

26th October 1893, No. 889 I.

OCTOBER.

Drawings

Forwarding a portfolio containing lithographed — of the head works of the Productive Public Works Systems of the Madras Presidency and requesting that its receipt may be acknowledged.

PUBLIC WORKS DEPARTMENT.

Irrigation.

LETTER—from

LT.-COL. R. R. E. DRAKE-BROCKMAN, R.E.,
Acting Secretary to the Government of Madras,
Public Works Department,

To

THE COLONIAL SECRETARY TO THE
GOVERNMENT OF NEW SOUTH WALES,
SYDNEY.

SIR,

With reference to paragraph 2 of G.O., No. 501 I., dated 27th May 1884, forwarded with my letter No. 502 I. of the same date, I am directed to forward a portfolio containing the lithographed drawings of the head works, as carried out, of the Productive Public Works Systems of this Presidency and request that its receipt may be acknowledged.

I have the honour to be,
Sir,
Your most obedient servant,

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

FORT ST. GEORGE,
26th October 1893.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 26th.

Recd. *Encl.*

26th October 1893, No. 890 I.

OCTOBER.

Drawings

Forwarding a portfolio containing lithographed — of the head works of the Productive Public Works Systems of the Madras Presidency and requesting that its receipt may be acknowledged.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From C. VINCENT, Esq., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, the 25th September 1893, No. 232 I.

I am directed to invite your attention to the irregularities in connection with the works enumerated in the accompanying copy of a statement (which has been furnished by the Accountant-General, Public Works Department) of objectionable items in the Accounts of Executive Engineers of the Irrigation Branch, Madras, to end of April 1893, and to request that very early steps may be taken to regularize matters, as several of the irregularities noticed are of long standing. I am to point out that the attention of the Madras Government was invited to the subject in Public Works Department letter No. 131 I. of the 22nd June 1893.

2. As regards the Periyár project, I am to say that the Government of India will await the receipt of the complete revised estimate, the submission of which has been promised on Colonel Pennycuick's return to duty next month.

Enclosure.

MADRAS PRESIDENCY.

Extract from the statement of objectionable items in the accounts of Executive Engineers remaining unremedied to end of April 1893.

Division.	Name of work.	Month, in the accounts of which objectionable expenditure first appeared.	Number of works.	Amount of estimate.	Excess expenditure		Remarks.
					During the month.	To end of the month.	
1	2	3	4	5	6	7	8
	49. Capital Expenditure on Irrigation Works not charged against Revenue.			RS.	RS.	RS.	
Kistna western.	1. Constructing seven crossings on Iskapalle channel and branches.	Mar. 1891.	1	..	44	1,171	The Executive Engineer states that the estimate cannot be submitted for sometime, to come until more urgent work in hand is disposed of.
Do. ..	2. Fixing demarcation stones on both sides of Iskapalle channel.	Jan. 1892.	1	..	..	677	Do. do.
	42. Major Works—Working Expenses.						
Kurnool ..	3. Cutting a new channel to Sirvel tank.	Feb. 1892.	1	..	..	807	The Superintending Engineer remarks that the estimate has been returned to Executive Engineer for revision.

Extract from the statement of objectionable items, &c.—*cont.*

Division.	Name of work.	Month, in the accounts of which objectionable expenditure first appeared.	Number of works.	Amount of estimate.	Excess expenditure: During the month.	Excess expenditure: To end of the month.	Remarks.
1	2	3	4	5	6	7	8
				RS.	RS.	RS.	
	35. *Construction of Protective Works.*						
Rushikulya.	4. Godohollo aqueduct ..	Feb. 1892.	1	72,500	1,898	30,359	The Superintending Engineer states that the Executive Engineer has been requested to send in completion report explaining the excess.
Do. ..	5. Excavation of Rushikulya canal.	..	1	5,50,000	16,444	1,01,645	
Do. ..	6. Excavation of Mahánadi canal.	Nov. 1891.	1	1,77,000	4,183	39,597	
Do. ..	7. Permanent diversions, Aska-Surada road.	April 1892.	1	2,000	..	3,099	
Do. ..	8. Surada reservoir waste weir.	April 1893.	1	35,000	2,983	2,983	Completion report and sanction of Government to pass the excess outlay are awaited.
Do. ..	9. Russellkonda reservoir dam.	Do. ..	1	3,61,400	10,865	10,865	
	49. *Capital Expenditure on Irrigation Works not charged against Revenue.*						
Kistna eastern.	10. Compensation for bank canal.	July 1891.	1	2,626	3	9,093	Sanction to revised estimate is awaited.
Do. ..	11. Constructing bridge on Ellore canal.	Sept. 1891.	1	10,500	..	2,034	Sanction of Government to pass the excess is awaited.
	49. *Capital Expenditure on Irrigation Works not charged against Revenue.*						
Gudiváda ..	12. Head sluice to Koppisudu at 1 mile 4,075 feet of Peddakommileru south side channel.	Nov. 1891.	1	840	..	122	Sanction of Government to admit outlay in excess of estimate is awaited.
Do. ..	13. Excavating Peddakommileru south side channel.	Do. ..	1	20,351	..	862	
Do. ..	14. Head sluice to a side channel along Bantumilli canal south side channel.	Mar. 1891.	1	550	..	77	
Do. ..	15. Compensation for land required for Polraz canal south side channel.	Feb. 1891.	1	642	..	1,212	Sanction to revised estimate is awaited.
Do. ..	16. Compensation for land required for Peddakommileru main drain.	July 1891.	1	1,000	..	227	Sanction of Government to admit excess is awaited.
Do. ..	17. Bridge at 5 miles 17 chains of Polraz canal south side channel.	Mar 1892. (Suppl.)	1	1,105	14	51	
Do. ..	18. Regulator at 6th mile of Konderu canal.	June 1891.	1	440	22	334	
Do. ..	19. Head sluice to Kalwapamula branch.	Mar. 1891.	1	468	33	118	
Do. ..	20. Polraz canal. Bridge at 1 mile 37 chains of Polraz canal north side channel.	Mar. 1892.	1	1,767	96	214	
Do. ..	21. Ryves' canal. Bridge at 3rd mile of Kondera channel.	Mar. 1891.	1	1,560	— 40	386	
Nellore ..	22. Excavating Indupur tank minor channel.	Feb. 1892.	1	830	..	87	
	Pennéru Anicut System.						
Nellore ..	23. Compensation for land, Sarvapalli canal.	Mar. 1891.	1	200	..	330	
	49. *Capital Expenditure on Irrigation Works not charged against Revenue.*						
Periyár No. I.	24. Main dam in the Periyár valley.	Feb. 1892.	1	6,91,000	87,276	5,36,536	Superintendent of Works states that a revised estimate for the whole project has been called for in G.O., No. 479 I., dated 31st May 1893, which is under preparation and will soon be submitted. Sanction to revised estimate is awaited.
Do.	25. Right bank escape ..	Sept. 1891.	1	1,37,000	11,123	1,21,926	
Do.	26. Water-shed tunnel ..	Oct. 1892.	1	2,39,095	27,440	76,780	
Do.	27. Water-shed cutting ..	Nov. 1892.	1	1,20,000	24,938	53,182	

Extract from the statement of objectionable items, &c.—*cont.*

Division.	Name of work.	Month, in the accounts of which objectionable expenditure first appeared.	Number of works.	Amount of estimate.	Excess Expenditure During the month.	Excess Expenditure To end of the month.	Remarks.
1	2	3	4	5	6	7	8
	Excess over Estimate.			RS.	RS.	RS.	
	43. *Minor Works and Navigation for which Capital and Revenue Accounts are not kept.*						
Kistna western.	28. Converting the right bank of bank canal at Pummadi into a river flood bank.	Mar. 1892. (Suppl.)	1	2,500	..	757	Sanction of Government to pass outlay in excess of estimate is awaited.
Buckingham canal.	29. Pennéru northern diversion through large island.	Sept. 1889.	1	48,445	..	8,782	
Bellary ..	30. Constructing the left weir of the Patha Kotha channel.	Mar. 1892.	1	5,640	..	532	
Kurnool ..	31. Kakerla Dosabundum cheruvu.	Do. (Suppl.)	1	1,490	..	1,790	Sanction to a revised estimate is awaited.
Coimbatore.	32. Re-sluicing the Thadapalli channel No. 7 from the 16th to 11th mile 2½ furlongs.	July 1891.	1	4,734	..	848	

Simla,
12th September 1893.

(Signed) R. G. MACDONALD,
Accountant-General.

No. 150 I.

Note by the Chief Engineer for Irrigation.

Of the 32 items of objectionable expenditure, 6 appertain to the first, 18 to the second, 3 to the third, and 1 to the fourth circles and 4 to the Periyár No. I division. The objection to item 30 in the third circle has been removed by the sanction accorded in G.O., No. 676 I., dated 31st July 1893. With his No. 237 E.I., dated 14th September 1893, the Superintending Engineer, IV Circle, forwarded a revised estimate for item 32 which is under disposal. The revised estimates for the Periyár project called for in G.O., No. 479 I., dated 31st May 1893, have been received from the Superintendent of Works, No. I Periyár Division, and are under check. Until these estimates are submitted to and sanctioned by the Government of India, the objection to items 24 to 27 will continue. The Superintending Engineer, I Circle, has not yet returned the revised comparative statement of the Rushikulya project sent to him for revision with this office memorandum No. 66 G.N., dated 7th August 1893.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

20th Oct. 1893.

Order—dated 31st October 1893, No. 901 I., Public Works.

Communicated to the Superintending Engineers concerned who will take immediate steps for regularizing the expenditure incurred on the items enumerated in the list appended to the letter from the Government of India, the objections to which have not already been removed.

2. The Superintending Engineer, I Circle, will expedite the resubmission of the revised comparative statement of the Rushikulya project.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 902 I., dated 31st October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " III "
" " " IV "
" Superintendent of Works, No. I Periyár Division.
" Examiner, Public Works Accounts.

Endorsement—dated 31st October 1893, No. 902 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31*st.*

Recd. *Encl.*

G.O., 31st Oct. 1893, Nos. 901, 902 I.

OCTOBER.

Statement of Objectionable Items

Forwarding copy of Proceedings in connection with certain irregularities noticed by the Government of India in the — in the accounts of Executive Engineers to end of April 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 12th October 1893, No. 161 C.E.

In forwarding, herewith, an estimate amounting to Rs. 6,100, being the value of the compound rock drilling machinery supplied from England on indent sanctioned in G.O., dated 22nd March 1893, No. 782 W., I have the honour to request that you will be good enough to sanction the same at your early convenience.

Order—dated 31st October 1893, No. 903 I., Public Works.

The following estimate is sanctioned from the balance of the amount reserved for tools and plant required for the Periyár Project, which will then be reduced to Rs. 4,485:—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
3. Tools and Plant.
4. Miscellaneous.

	RS.
Value of compound rock drilling machinery, estimate	6,100

2. This sanction is registered as No. 143 I. of 1893-94.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D

To the Chief Engineer for Irrigation.
" Superintendent of Works, No. I Periyár Division, with one estimate.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31*st.*

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 903 I.

OCTOBER.

Periyar Project

Estimate of Rs. 6,100 for compound rock drilling machinery for Periyár No. I Division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

No. 151 I.

Note by the Chief Engineer for Irrigation.

In his endorsement No. 1699, dated 7th October 1893, the Superintending Engineer, III Circle, reports that Rs. 800 and Rs. 1,500 of the existing grants for agricultural repairs, river conservancy and embankment, respectively, of the Cuddapah division will not be required. These amounts aggregating Rs. 2,864 including establishment and tools and plant charges may be resumed.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

20th Oct. 1893.

Order—dated 31st October 1893, No. 904 I., Public Works.

The sum of Rs. 2,864, referred to in the foregoing note by the Chief Engineer for Irrigation, is resumed and credited to the reserve under "Provincial—43. Minor Works and Navigation."

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 904 I.

OCTOBER.

Funds

Certain modification of allotments in III Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

Statement showing the surrenders and demands under Provincial Irrigation, IV Circle.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of Mar. 1893.	Outlay in the current year up to end of September 1893.	Balance of estimate.	Existing grant for 1893–94.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
		IRRIGATION AND NAVIGATION. *Works for which Capital and Revenue Accounts are kept.* Capital.	RS.		RS.	RS.	RS.	RS.	RS.	RS.	
Coimbatore.	1	Kalingaroyen channel ..	3,800	Not yet sanctioned.	..	3,220	580	..	3,800	3,800	This work is completed. Allotment is required to cover the expenditure already incurred. This sum of Rs. 3,800 includes the sum of Rs. 3,200 applied for in the first application.
		Agricultural. River Conservancy.									
	2	Minor original works ..	..	..	..	..	..	1,000	1,000	..	This sum is surrendered to meet partly expenditure incurred on item No. 1.
		IRRIGATION AND NAVIGATION. *Works for which Capital and Revenue Accounts are not kept.*									
	3	Repairs, ordinary	..	..	..	..	..	12,000	2,800	9,200	This sum is surrendered to meet partly expenditure incurred on item No. 1.

No. 271 E.I.

Copy forwarded to the Chief Engineer for Irrigation with a request that he will be good enough to obtain the sanction of Government to the re-arrangement of grants shown in the above statement.

(Signed) A. W. SMART, Lt.-Col., R.E.,
Superintending Engineer, IV Circle.

11th October 1893.

Order—dated 31st October 1893, No. 905 I., Public Works.

The following transfers of funds are sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Coimbatore Division.

From Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.			*To* Minor Works for which Capital and Revenue Accounts are kept. Capital Account. Kalingaroyen Channel System	
Ordinary Works.	RS.	RS.		RS.
Repairs	2,754		Works	3,800
Establishment	634		Establishment	874
Tools and plant	41			
		3,429		
Agricultural Works. River Conservancy.				
Minor original works	1,000			
Establishment	230			
Tools and plant	15			
		1,245		
Total ...		4,674	Total ...	4,674

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, IV Circle.
„ Examiner, Public Works Accounts.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 905 I.

OCTOBER.

Funds

Sanctioning certain transfers of — in IV Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

No. 147 I.

Note by the Chief Engineer for Irrigation.

The following drawings connected with the Gódávari and Pennér anicut systems are submitted for transmission to the Government of India with reference to its letter, No. 5 I., dated 7th January 1884, printed in Proceedings of Madras Government No. 264 I., dated 10th March 1884. These complete the requisition made by the Government of India :—

Gódávari Delta System.

1. Sketch map.
2. Plan showing the position of the anicut and head works together with chart of river taken in 1884 for one mile above and below the anicut.
3. Plan of Gódávari anicut, Dowlaishweram branch.
4. " " Ralli branch.
5. " " Muddur branch.
6. " " Vijeswaram branch.
7. Dowlaishweram under sluices.
8. Bobberlanka "
9. Vijeswaram "
10. Dowlaishweram head sluice.
11. Head sluice to main canal at Bobberlanka.
12. Shutter and screw gearing for Bobberlanka.
13. Head sluice to main canal at Vijesweram.
14. Head lock at Dowlaishweram.
15. Double purchase gearing for Dowlaishweram.
16. Head lock at Bobberlanka.
17. " Vijesweram.
18. Diagram showing the rise and fall of the Gódávari river at Dowlaishweram anicut.

Pennér Anicut System.

1. Sketch map.
2. Plan showing the position of the anicut and head works together with chart of river taken in 1884 for one mile above and below the anicut.
3. Pennér anicut at Nellore.
4. Northern under sluice.
5. Southern do.
6. Main head sluice.
7. Auxiliary head sluice.
8. Diagram showing rise and fall of the Pennér river at Pennér anicut.

Madras,
14th October 1893.

(Signed) F. W. ASHPITEL,
for Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 31st October 1893, No. 906 I., Public Works.

The drawings of the Gódávari and Pennér anicut systems submitted by the Chief Engineer for Irrigation will be forwarded to the Government of India.

[Here enter No. 907 I., dated 31st October 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " II "

Endorsement—dated 31st October 1893, No. 907 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, Nos. 906 I., 907 I.

OCTOBER.

Drawings

Forwarding — of the Gódávari and Pennér anicut systems.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 17th September 1893, No. 1511 G.D.

I have the honour to submit herewith the usual annual statements, parts I and II, together with the abstract for the irrigation and navigation floating plant for the ensuing official year 1894–95.

2. In part II, one wooden deep boat No. 45 and a circular trap punt No. 103 are not shown. The former has been sold during the year under G.O., No. 450 I., dated 17th May 1893, and the latter which was lent to the Kistna Eastern division has been transferred permanently—*vide* G.O., No. 527 I., dated 14th June 1893.

3. The probable cost of maintenance of floating plant for 1894–95 is estimated at Rs. 17,867 exclusive of the cost of upkeep of ferry ballacuts on different canals. The required funds will be applied for in the budget.

Enclosures.

Statement of the Irrigation floating plant in the Gódávari District showing the estimated cost of upkeep during the year 1894–95 (Return No. 27).

Part I.—Steamers and Steam Dredgers.

Registered No.	Details of plant.		Value of plant.		Probable cost of upkeep in 1894–95.	Remarks.
	Description.	Names of steamers, &c.	Original.	Present book value.		
1	2	3	4	5	6	
			RS.	RS.	RS.	
		Irrigation.				
	Steamer ..	"Shamrock"	20,014	8,382	860	In good working order.
		"Arthur Cotton"	9,535	6,871	430	
		"Victoria"	50,956	20,237	910	
	Steam tug ..	"John Mullins"	31,054	20,340	920	
		Total ..	..	..	3,120	
1		Canal iron dredger, double bucket ladder, side delivery.	26,373	2,773	460	Boiler condemned.
2		Canal iron dredger, single bucket ladder, end delivery.	15,395	1,817	460	In good working order.
3		Canal iron dredger, single bucket ladder, side delivery.	30,437	6,146	460	
4	Dredger ..	Do. do. ..	30,437	6,692	460	In good working order; lately repaired.
5		Do. do. ..	30,437	3,780	460	Under repairs.
6		Do. do. ..	31,097	5,579	460	In working order.
		Priestman's, size B.	16,580	5,387	460	Under repair.
		Do. size A-1	13,438	7,016	460	In good workin gorder.
		Do. size A-2	16,120	13,702	460	
		Total ..	..	..	4,140	
		Grand Total ..	..	..	7,260	

Rules for finding present book value.

(1) Steamers to be reduced 10 per cent. every year, and the amount of special repairs, if any, must be added thereto.

(2) Steam dredgers to be reduced 15 per cent. every year, and the amount of special repairs, if any, must be added thereto.

Statement of the Irrigation floating plant in the Gódávari District showing the estimated cost of upkeep during the year 1894–95 (Return No. 27).

Part II.—Barges, Boats and Punts.

Registered No.	Description of boats.	Value of plant. Original.	Value of plant. Present book value.	Probable cost of upkeep in 1894–95.	Remarks.
	Irrigation.	RS.	RS.	RS.	
1	Iron flat	6.243	2,063	140	
3	Canal iron punt	2,811	854	120	In working order.
5	Do.	2,812	1,750	120	
7	Do.	2,812	2,077	120	In good working order; lately repaired.
10	Do.	2,812	1,107	120	
11	Do.	2,812	1,146	120	
13	Iron dredge punt	2,310	1,380	75	In working order.
15	Canal iron punt	2,812	1,225	120	
17	Do.	2,812	2,278	120	In good working order; lately repaired.
18	Iron dredge punt	2,310	775	75	
20	Canal iron punt	2,812	1,009	120	
21	Iron dredge punt	2,310	1,099	75	In working order.
22	Do.	2,310	636	75	
25	Canal iron punt	2,811	906	120	
27	Do.	2,811	971	120	Under repairs.
30	Do.	2,811	1,779	120	In working order.
31	Do.	2,811	1,022	120	
34	Iron flat	4,693	1,485	130	In good working order; lately repaired.
36	Canal iron punt	2,812	1,062	120	
37	Do.	2,812	997	120	
38	Do.	2,812	858	120	In working order.
39	Do.	2,812	971	120	
40	Iron deep boat	4,693	2,867	190	
44	Wooden deep boat	2,330	2,376	170	In good working order; lately repaired.
47	Do.	2,000	2,669	170	In working order.
48	Do.	2,000	2,151	170	Under repairs.
49	Do.	2,000	2,397	170	In working order.
50	Do.	2,117	1,783	170	Under repairs.
65	Iron light boat	1,000	926	70	In good working order; lately repaired.
66	Do.	1,000	944	70	
67	Do.	1,000	1,027	70	In working order.
68	Do.	1,000	942	70	In good working order; lately repaired.
69	Do.	1,000	977	70	
70	Do.	1,000	774	70	
71	Do.	1,433	943	70	In working order.
72	Do.	1,433	584	70	
74	Do.	1,000	897	70	
75	Do.	1,000	539	70	In good working order; lately repaired.
77	Wooden light boat	750	480	75	
81	Iron flat	7,375	1,399	140	
82	Wooden flat	2,722	1,960	150	
83	Do.	2,722	1,781	150	
84	Do.	2,722	2,290	150	
85	Do.	2,722	1,758	150	
86	Do.	2,722	1,791	150	
87	Do.	2,722	1,459	150	In working order.
88	Do.	2,800	1,787	150	
89	Do.	2,800	1,913	150	
90	Do.	2,800	1,901	150	
91	Do.	2,800	2,775	150	
92	Do.	2,800	1,907	150	
93	Do.	2,800	1,663	150	
94	Do.	2,405	2,091	130	In good working order; lately repaired.
95	Do.	2,405	2,465	130	In working order.
99	Do.	2,405	1,828	130	
100	Iron double trap punt	4,185	1,190	110	Under repairs.
101	Do. do.	4,185	1,291	110	
104	Do. do.	4,060	1,549	110	In working order.
105	Iron punt	6,960	3,701	140	Under repairs.
12	Second-class staff boat	820	..	150	
13	Do. do.	820	..	150	
14	First-class do.	1,400	..	230	
15	Second-class do.	800	..	150	
16	First-class do.	1,250	..	230	In working order.
17	Second-class do.	850	..	150	
18	First-class do.	1,400	122	230	
19	Second-class do.	850	70	150	

Statement of the Irrigation floating plant in the Gódávari District showing the estimated cost of upkeep, &c.—*cont.*

Registered No.	Description of boats.	Value of plant. Original.	Value of plant. Present book value.	Probable cost of upkeep in 1894–95.	Remarks.
	Irrigation—cont.	RS.	RS.	RS.	
20	First-class staff boat	1,400	240	230	In working order.
21	Second-class do.	840	140	150	In working order.
22	First-class do.	1,783	1,190	230	In working order.
23	Do. do.	1,780	1,632	230	In working order.
	Total ..	..	..	9,385	
A.	Upper Gódávari barge	3,500	5,961	340	In working order.
D.	Do. do.	3,500	4,799	340	In working order.
E.	Do. do.	3,500	5,600	340	In working order.
	Total ..	..	..	1,020	
2	Jolly boat	165	99	20	In working order.
3	Do.	340	203	16	In working order.
4	Do.	165	213	20	In working order.
5	Do.	Unknown	..	16	In working order.
6	Survey Nava	300	179	35	Under repairs.
7	Do.	300	179	35	In working order.
8	Jolly boat of steamer "John Mullins" ..	Not known.	..	60	In working order.
	Total ..	..	..	202	
	Grand Total ..	..	..	10,607	

Rules for finding present book value.

(1) Boats and barges to be reduced 10 per cent. every year, and the amount of special repairs, if any, must be added thereto.

(2) Staff boats to be reduced by one-twelfth of their original cost for each year of their life.

Detailed approximate estimate of the annual cost of maintenance of the Irrigation floating plant, Gódávari District.

Particulars.	Steamer "Shamrock."	Steamer "Victoria."	Steam launch "Arthur Cotton."	Steam Tug "John Mullins."	Canal dredgers.	Barges.	Canal punts.	Dredge punts, 30 feet long.	Wooden light boats.	Iron light boats.	Wooden flats, 74 feet long.	Staff boats, first class.
1	2	3	4	5	6	7	8	9	10	11	12	13
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching ..	50	50	50	50	50	25	12	10	10	10	15	10
Painting	500	500	195	550	120	150	31	20	..	20	..	110
Caulking	70	44	18	80	50	30	36	20	40	10	110	40
Varnishing	..	20	..	..	..	..	..	..	..	..	..	10
Tarring	..	..	..	..	50	50	20	10	..	10	..	..
Ropes, &c., ...	30	30	30	30	30	58	11	10	20	10	14	10
Lascars	..	..	..	..	20	..	..	..	..	..	..	..
Small stores	..	..	..	..	12	..	..	..	..	..	..	..
General charges	60	66	37	60	28	27	10	5	5	10	11	20
Sundry repairs	150	200	100	150	100	..	..	..	..	..	..	30
Total ..	860	910	430	920	460	340	120	75	75	70	150	230

Detailed approximate estimate of the annual cost of maintenance of the Irrigation floating plant, Gódávari District—*cont.*

Particulars.	Staff boats, second class.	Iron deep boats.	Iron flats Nos. 1 and 81 and iron punt No. 105.	No. 103 circular trap punt.	Jolly boats Nos. 1 and 8.	Double trap punts.	Wooden flats, 60 feet 3 inches long.	Iron flat, 60½ feet long.	Wooden deep boats.	Jolly boats Nos. 2 and 4.	Jolly boats Nos. 3 and 5.	Survey Navas.
	14	15	16	17	18	19	20	21	22	23	24	25
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching ..	10	30	15	10	5	12	15	12	25	..	..	5
Painting	65	63	45	22	30	30	..	35	..	8	..	..
Caulking	33	20	36	..	18	30	90	40	99	8	12	24
Varnishing	..	..	..	..	..	..	..	..	..	..	..	..
Tarring	..	27	19	..	..	20	..	20	..	..	..	..
Ropes, &c.	12	37	14	5	2	10	14	15	34	4	4	6
Lascars	..	..	..	..	..	..	..	..	..	..	..	..
Small stores	..	..	..	..	..	..	..	..	..	..	..	..
General charges	10	13	11	3	5	8	11	8	12	..	..	..
Sundry repairs	20	..	..	..	..	..	..	..	..	..	..	..
Total ..	150	190	140	40	60	110	130	130	170	20	16	35

(Signed) W. JONES,
Boat Superintendent.

7th August 1893.

Abstract showing the comparison of details between the estimated maintenance cost of floating plant in the Gódávari District for 1893–94 and 1894–95.

—	Number.		Original value.		Book value.		Cost of upkeep.	
	1894–95.	1893–94.	1894–95.	1893–94.	1894–95.	1893–94.	1894–95.	1893–94.
			RS.	RS.	RS.	RS.	RS.	RS.
Steamers	4	4	1,11,559	1,11,559	55,830	62,031	3,120	3,120
Dredgers	9	9	2,10,314	2,10,314	52,892	59,087	4,140	4,140
Barges, A, D and E from Upper Gódávari works	3	3	10,500	10,500	16,360	18,177	1,020	1,020
Iron flats Nos. 1, 34 and 81 ..	3	3	18,311	18,311	4,948	5,497	410	410
Iron punts Nos. 3, 5, 7, 10, 11, 15, 17, 20, 25, 27, 30, 31, 36, 37 38, 39 and 105	17	17	51,947	51,947	23,713	23,861	2,060	2,060
Iron dredge punts Nos. 13, 18, 21, 22.	4	4	9,240	9,240	3,890	4,249	300	300
Iron dredge double trap punts Nos. 100, 101, 104	3	3	12,430	12,430	4,030	4,347	330	330
Iron deep boat No. 40	1	1	4,693	4,693	2,867	3,185	190	190
Iron light boats Nos. 65 to 72, 74 and 75	10	10	10,866	10,866	8,553	7,579	700	700
Wooden deep boats Nos. 44, 47 to 50.	5	6	10,447	12,564	11,376	13,612	850	1,020
Do. light boat No. 77 ..	1	1	750	750	480	533	75	75
Do. flats Nos. 82 to 95 and 99.	15	15	40,347	40,347	29,369	31,716	2,190	2,190
Staff boats, first class, Nos. 14, 16, 18, 20, 22 and 23	6	6	9,013	9,013	3,184	3,818	1,380	1,380
Staff boats, second class, Nos. 12, 13, 15, 17, 19 and 21	6	6	4,980	4,980	210	421	900	900
Jolly boats and Survey Navas, Nos. 2 to 8..	7	7	1,270	1,270	873	841	202	202
Circular trap punt 103	..	1	..	1,200	..	422	..	40
Total ..	94	96	5,06,667	5,09,984	2,18,575	2,39,376	17,867	18,077

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

18th September 1893.

Order—dated 31st October 1893, No. 908 I., Public Works.

The estimate of the cost of maintaining the floating plant of the Gódávari delta system is approved; Rs. 17,867 will be provided on this account in the budget estimates for "Major Works" for 1894–95.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 908 I.

OCTOBER.

Floating Plant

Estimate of the cost of maintaining the —
of the Gódávari delta system, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation. Account.

Read—the following paper:—

From Colonel A. T. FRASER, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 13th October 1893, No. 1792.

I have the honour to forward, for sanction, the marginally-noted estimates, amounting to Rs. 900, supplemented by returns, for the annual upkeep to the boats of the Kurnool-Cuddapah canal for 1894–95.

Part II.—Statement showing estimated cost of upkeep during 1894–95.
Part III.—Detailed estimate of annual cost.
Part IV.—Comparative statement of estimated cost of maintenance in 1893–94 and 1894–95.

2. The estimates provide for the annual maintenance only, as all the special repairs to boats will be completed in the current official year.

Enclosures.

Part II.—Statement of Irrigation floating plant in Kurnool division showing the estimated cost of upkeep during 1894–95.

Register number of boat.	Detail of plant description of boat.	Date of construction.	Measurement of plant. Hull over all. Length.	Breadth.	Depth.	Draft when loaded. Feet.	Inches.	Tonnage.	Value of plant. Original.	Present book value.	Probable cost of upkeep in 1894–95.
1	2	3	4	5	6	7	8	9	10	11	12
	Staff Boat.								RS.	RS.	RS.
10	"Duke"	1879–80 / **1882–83**	47	8	3	2	..	12	*3,370 each	2,357	140
11	"Chairman"	"								2,418	145
8	"Sir Arthur"	"								1,705	145
	Total ..	..	..	..	..	..	..	..	..	6,480	430
	Pulicat No. 1	1891–92	..	..	..	..	..	2	198	172	15
	" " 2	1891–92	..	..	..	..	..	2	198	172	15
	Total ..	..	..	..	..	..	..	..	..	344	30
	Passenger.										
4	"Rat"	1879–80 / **1882–83**	56	8	3	2	6	16	*3,548 each	2,757	60
5	"Peacock"	"								2,196	70
6	"Elephant"	"								2,028	40
9	"Ram"	"								2,285	60
	Total ..	..	..	..	..	..	..	..	..	9,266	230

Note.—The ordinary figure in column 3 (1879–80) is the date of purchase by Madras Irrigation and Canal Company and the block figure (1882–83) is the date of transfer to Government.

* Assumed value at the time of transfer to Government (*vide* paragraph 1 of E. I.'s memo. No. III/15 K.C., dated 9th August 1890—Superintending Engineer's No. 1488, dated 25th August 1890).

Part II.—Statement of Irrigation floating plant in Kurnool division showing the estimated cost of upkeep during 1894–95—*cont.*

Register number of boat.	Detail of plant description of boat.	Date of construction.	Measurement of plant. Hull over all. Length.	Breadth.	Depth.	Draft when loaded. Feet.	Inches.	Tonnage.	Value of plant. Original.	Present book value.	Probable cost of upkeep in 1894–95.
1	2	3	4	5	6	7	8	9	10	11	12
									RS.	RS.	RS.
	Cargo.	1879–80									
2	"Kite"	**1882–83**	56	8	3′ 6″	3	..	24	*3,604 each	2,179	60
56	"Seetha"	"								2,106	40
62	"Queen Boadecia" ..	"								2,294	50
61	"Queen of Scots" ..	"								1,538	30
	Total ..	..	..	..	..	..	..	..	..	8,117	180
	Punts	1885–86	..	..	..	..	..	..	210	21	30

Note.—The ordinary figure in column 3 (1879–80) is the date of purchase by Madras Irrigation and Canal Company and the block figure (1882–83) is the date of transfer to Government.

* Assumed value at the time of transfer to Government (*vide* paragraph 1 of E. I.'s memo. No. III/15 K.C., dated 9th August 1890—Superintending Engineer's No. 1488, dated 25th August 1890).

Part III.—Detailed approximate estimate of the annual cost of the maintenance of floating plant for 1894–95.

—	Staff. A. "Duke."	Staff. A. "Chairman."	Staff. A. "Sir Arthur."	Staff. A. No. 1 Pulicat.	Staff. A. No. 2 Pulicat.	Passenger. A. "Rat."	Passenger. A. "Peacock."	Passenger. A. "Elephant."	Passenger. A. "Ram."	Cargo. A. "Kite."	Cargo. A. "Seetha."	Cargo. A. "Queen Boadecia."	Cargo. A. "Queen of Scots."	Cargo. A. Punts.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching ..	5	5	5	..	..	5	5	..	5	5	..	5	..	..
Painting	100	100	100	3	3	20	20	10	20	15	12	12	8	..
Caulking	..	..	..	3	3	..	..	..	..	..	..	..	..	12
Tarring	6	6	6	2	2	7	7	7	7	6	7	7	7	10
Ropes, &c.	15	15	15	4	6	15	15	12	12	15	15	15	12	6
Sundry repairs	14	19	19	3	1	13	23	11	16	19	6	11	3	2
	140	145	145	15	15	60	70	40	60	60	40	50	30	30
Total ..	900													

A = Annual repairs.

Part IV.—Abstract showing the comparison of details between the estimated maintenance cost of floating plant in the Kurnool division for 1893–94 and 1894–95.

—	Number. 1894–95.	Number. 1893–94.	Original value. 1894–95.	Original value. 1893–94.	Book value. 1894–95.	Book value. 1893–94.	Cost of upkeep. 1894–95, estimated.	Cost of upkeep. 1893–94, actual.	Remarks.
1	2	3	4	5	6	7	8	9	10
			RS.	RS.	RS.	RS.	RS.	RS.	
1. Staff boats	3	3	10,110	10,110	6,480	7,155	430	160	The increase in staff boats is due to their having to be painted white outside.
2. Passenger boats ..	4	4	14,192	14,192	9,266	9,521	230	819	
4. Cargo boats	4	4	14,360	14,360	8,117	8,060	180	448	
5. Punts	3	3	210	210	21	42	30	30	
2. Pulicat boats ..	2	2	396	396	344	370	30	28	
Total ..	16	16	39,268	39,268	24,228	25,148	900	1,485	

Note.—The book value in column 6 is arrived at thus—Take the figure in column 4, deduct $\frac{12}{15}$; to the balance add special repairs to end of 1893–94.

Report to accompany the estimate for repairs to boats for 1894–95, Kurnool division.

As by the end of the current year, *i.e.*, 1893–94, all the staff, passenger and cargo boats will have been thoroughly repaired, provision is made in the estimates for 1894–95 only for the annual maintenance.

2. Provision is made to paint the staff boats white outside.

3. The proposed expenditure in 1894–95 is Rs. 900 against an expected revenue from the boats of about Rs. 1,800, amount realized last year (1892–93) being Rs. 1,808.

Kurnool,
26th September 1893.

(Signed) J. C. JOHNSTON,
Executive Engineer.

Order—dated 31st October 1893, No. 910 I., Public Works.

The estimate of the cost of maintenance of the floating plant belonging to the Kurnool-Cuddapah canal is approved and Rs. 900 will be provided on this account in the budget estimates for major works for 1894–95.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 910 I.

OCTOBER.

Floating Plant

Estimate of the cost of maintenance of the — belonging to the Kurnool-Cuddapah canal, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Application for modifications and additions to existing grants under Irrigation for 1893–94, prepared with reference to Chief Engineer for Irrigation's circular memo. No. 26 G., dated 14th September 1893.

[*Statement.*

Application for modifications and additions to existing grants under Irrigation for 1893–94, prepared with reference to Chief Engineer for Irrigation's circular memo. No. 26 G., dated 14th September 1893.

Item No.	Division.	Works.	Amount of estimate.	Existing grant.	Modification applied for.		Modifications proposed.		Revised grant.	Remarks.
					Reduction.	Increase.	Reduction.	Increase.		
			RS.	RS.	RS.	RS.	RS.	RS.	RS.	
		43. Minor Works and Navigation. *Works for which Capital and Revenue Accounts are kept.* Capital. Shatiatope Anicut System. Improving Morattu Channel.								
1	South Arcot ..	Compensation for land	2,273	2,273	..	..	..	..	2,273	
1-A	Do. ..	Head sluice	2,570	..	..	13	..	13	13	Required to complete the work, being an incomplete work of last year; revised estimates (comparative statement) were submitted in No. 444 E.I., dated 21st September 1893, and is in correspondence with regard to rates, &c.
2	Do. ..	Dam of 9 feet at 4,620 feet	600	..	..	91	..	91	91	
3	Do. ..	Culvert of 9 feet with drop at 24th section ..	900	90	..	6	..	6	96	
4	Do. ..	Aqueduct	3,890	3,352	..	..	..	..	3,352	
5	Do. ..	Pipe aqueduct at 23,239 feet	190	190	190	..	190	..	..	Work cannot be done before April 1894.
6	Do. ..	Drop of $3\frac{1}{2}$ feet at 49th section	760	..	..	100	..	100	100	Required to complete the work, being an incomplete work of last year.
7	Do. ..	Culvert of 9 feet in Kurinjipundy road ..	1,110	..	..	34	..	34	34	
8	Do. ..	Cutting drainage channel to aqueduct ..	1,280	1,180	680	..	680	..	500	Work can be done this year only to the extent of Rs. 500.
9	Do. ..	Improving the channel	5,287	4,787	1,787	..	1,787	..	3,000	A portion of this work cannot be done before April next.
10	Do. ..	Reserve for works	..	342	342	..	342	..	..	
11	Do. ..	Manambathan channel, constructing 4 masonry dams.	2,800	..	..	2,247	..	2,247	2,247	Grant is absolutely necessary to meet the outlay already incurred and to complete the work.
		Total ..	..	12,214	2,999	2,491	2,999	2,491	11,706	
		Tirukkóyilúr Anicut System. Pombay Channel Improvements.								
12	South Arcot ..	Constructing a regulator at 3rd mile 2nd furlong.	2,655	..	..	220	..	220	220	Rs. 6,699 is already spent up to end of March 1893. This amount is required to complete the work, being work of last year.
13	Do. ..	Constructing surplus weir at 8th mile 1st furlong.	680	197	197	..	197	..	..	Not required, work having been completed.
14	Do. ..	Constructing terminal drop at 10th mile 6th furlong.	1,340	1,340	..	..	..	..	1,340	
15	Do. ..	Constructing Cuddalore outlet at 5th mile $6\frac{1}{2}$ furlong.	1,225	561	..	649	..	649	1,210	Required to complete the work.
16	Do. ..	Constructing Ayandoor outlet at 6th mile 2nd furlong.	1,440	674	..	62	..	62	736	
17	Do. ..	Clearing silt and restoring main channel ..	11,700	3,197	208	..	208	..	2,989	A sum of Rs. 208 is surrendered in order to meet the urgent demands on the above works.
18	Do. ..	Constructing three lascars' sheds	550	550	..	..	..	..	550	
19	Do. ..	Repairing masonry works	500	392	18	..	18	..	374	Rs. 18 not required.
		Total	..	6,911	423	931	423	931	7,419	

		Pálár Anicut System.								
20	Chingleput ..	Tirupakuli tank, constructing a weir, &c. ..	6,260	1,405	..	1,095	..	1,095	2,500	The present grant on this wor has already been exceeded.
		Total ..	..	1,405	..	1,095	..	1,095	2,500	
		Revenue Extensions and Improvements.								
		Minor Works.								
21	South Arcot ..	Pelandorai anicut system	L.S.G.	1,608	220	..	220	..	1,388	A sum of Rs. 1,678 is surrendered from these three systems, as it is not possible to work out the grant to the full extent within the close of the official year, and it is recommended that this sum may be transferred to Maintenance and Repairs under Pelandorai and Mehamattur anicut systems.
22	Do. ..	Shatiatope do.	Do.	2,000	738	..	738	..	1,262	
23	Do. ..	Vriddhachalam do.	Do.	1,470	720	..	720	..	750	
		Total ..	..	5,078	1,678	..	1,678	..	3,400	
		Pálár Anicut System.								
24	Chingleput ..	Revenue extensions and improvements ..	L.S.G.	2,000	300	..	300	..	1,700	
		Maintenance and Repairs.								
25	South Arcot ..	Pelandorai anicut system	L.S.G.	10,997	..	686	..	686	11,683	
26	Do. ..	Mehamattur do.	..	2,008	..	992	..	992	3,000	
		Total ..	..	13,005	..	1,678	..	1,678	14,683	
27	Chingleput ..	Pálár anicut system	L.S.G.	7,000	..	1,900	..	1,900	8,900	
28	Do. ..	Madras water works	..	2,816	..	2,584	..	2,584	5,400	
29	Do. ..	Chembrambakam system	..	993	..	1,507	..	1,507	2,500	
30	Do. ..	Vallúru anicut system	..	488	..	512	..	512	1,000	
		Total ..	..	11,297	..	6,503	..	6,503	17,800	
		Irrigation and Navigation.								
		Works for which neither Capital nor Revenue Accounts are kept.								
		Major Original Works.								
31	South Arcot ..	Constructing a sluice and escape and cutting a channel to Pallagacherry tank.	3,310	..	..	1,150	..	1,150	1,150	The work is completed at an outlay of Rs. 2,860. The amount applied for is required to meet the liabilities incurred.
32	Chingleput ..	Allekuli tank, constructing a weir	10,600	5,000	..	600	..	600	5,600	Due to revised estimate which is sanctioned.
33	Do. ..	Uttukottai tank, constructing sluice weir ..	3,620	3,620	1,120	..	1,120	..	2,500	Found necessary.
34	Do. ..	Thyur tank, reconstructing surplus weir ..	7,000	5,000	..	1,670	..	1,670	6,670	
35	Do. ..	Kuam tank, repairing and improving ..	25,500	..	..	713	..	713	713	Revised estimate has been sanctioned from Tank Restoration Scheme to Ordinary Major Original Works; Rs. 713 is actually required for expenditure incurred under Tank Restoration Scheme and since transferred to Major Ordinary Original Works.
36	Do. ..	Uttramallur tank, diversion channel ..	4,000	..	..	260	..	260	260	All completed and the grant is to pay balance and close the accounts found necessary as there is water in the tank and the low level sluice provided cannot be finished this year.
37	Do. ..	Do. Mariammau sluice ..	5,820	..	..	250	..	250	250	
38	Do. ..	Do. supply channel head sluice.	11,800	..	..	467	..	467	467	
39	Do. ..	Kumavakum tank, constructing sluice, &c. ..	2,780	2,780	1,580	..	1,580	..	1,200	
		Total ..	..	16,400	2,700	3,960	2,700	3,960	17,660	

Application for modifications and additions to existing grants under Irrigation for 1893–94, &c.—*cont.*

Item No.	Division.	Works.	Amount of estimate.	Existing grant.	Modification applied for. Reduction.	Modification applied for. Increase.	Modifications proposed. Reduction.	Modifications proposed. Increase.	Revised grant.	Remarks.
			RS.	RS.	RS.	RS.	RS.	RS.	RS.	
		Minor Original Works.								
40	South Arcot ..	Minor original works	L.S.G.	15,000	1,150	..	1,150	..	13,850	This is surrendered to be transferred to Major Works.
41	Chingleput ..	Do.	Do.	20,000	3,200	..	3,200	..	16,800	
		Minor Repairs.								
42	South Arcot ..	Lump sum grant	..	50,000	5,000	..	5,000	..	45,000	Surrendered. This sum is surrendered to meet liabilities on items 48 and 55.
43	Chingleput ..	Do.	..	80,000	3,194	..	3,194	..	76,806	
44	Tanjore ..	Original works, lump sum	..	1,000	500	..	500	..	500	Not likely to be utilized as estimates are not yet sanctioned to work up the grant and the best working season has past.
45	Do. ..	Repairs, lump sum	..	1,000	500	..	500	..	500	
		Tank Restoration Scheme.								
46	Chingleput ..	Original works	..	19,778	1,678	..	1,678	..	18,100	
47	Do. ..	Do. repairs	..	40,000	1,100	..	1,100	..	38,900	
		AGRICULTURAL. *River Embankments.* Major Original Works.								
48	South Arcot ..	Constructing a drainage sluice in the left bank of Coleroon river, 32nd mile.	3,780	1,000	..	1,800	..	1,800	2,800	Additional grant is required to meet the liabilities on this work.
49	Tanjore ..	Coleroon right bank 100/1·4, realigning ..	8,800	4,000	..	2,000	..	2,000	6,000	Required for expenditure during the year.
50	Do. ..	Mudicondanur both banks from bridge on road No. 5 to road No. 15, improving.	11,800	5,800	1,000	..	1,000	..	4,800	Will probably not be required for expenditure this year.
		Total ..	..	9,800	1,000	2,000	1,000	2,000	10,800	
51	Chingleput ..	Demarcating the lands required for Narranaveram river embankment.	4,260	..	..	64	..	64	64	Balance of amount paid and the accounts closed.
		Minor Original Works.								
52	South Arcot ..	Lump sum grant	..	500	500	..	500	..	..	No estimates.
53	Chingleput ..	Do.	..	500	450	..	450	..	50	
54	Do. ..	Repairs	..	1,000	..	500	..	500	1,500	
		Repairs.								
55	South Arcot ..	Repairs	..	4,500	..	4,200	..	4,200	8,700	The original grant is not sufficient to meet the requirements under this head. An estimate of Rs. 9,200 sanctioned for the deviation of Coleroon bank along Goveraput channel. The outlay up to end of July 1893 is Rs. 3,927; the work has been stopped for want of funds. The additional grant applied for is required to meet the liabilities.
		River Conservancy.								
56	South Arcot ..	Minor original works	L.S.G.	500	500	..	500	..	..	No estimate.
57	Chingleput ..	Repairs	..	..	..	500	..	500	500	Required for current year's expenditure.

Note.—A supplemental statement will be submitted on receipt of information from Negapatam.

No. 334 E.I.

Submitted to the Chief Engineer for Irrigation for favour of sanction.

13th October 1893.

(Signed) J. C. LARMINIE,
Superintending Engineer, V Circle.

No. 157 I.

Submitted to Government.

2. The demands under "Minor Works for which neither Capital nor Revenue Accounts are kept, Ordinary Works," for items 31, 32, 34 to 38 aggregate Rs. 5,110 and may be met from the surrenders from items 33, 39 and 40 to 45 amounting to Rs. 16,244, leaving Rs. 11,134 or Rs. 13,862 including establishment and tools and plant charges. This amount will be increased to Rs. 17,321 by the addition of the surrenders from Tank Restoration works, items 46 and 47, amounting to Rs. 2,778, or Rs. 3,459 including establishment and tools and plant charges.

3. Under Agricultural Works the demands for items 48, 49, 51, 54, 55 and 57 amount to Rs. 9,064, while the surrenders from items 50, 52, 53 and 56 aggregate only Rs. 2,450; the difference of Rs. 6,614, or Rs. 8,234 including establishment and tools and plant charges, may be met from the sum of Rs. 17,321 referred to in paragraph 2 above, leaving Rs. 9,087 which may be credited to the reserve under 43. Minor Works and Navigation.

4. The following transfers of funds may be sanctioned:—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.

From	RS.	RS.	*To*	RS.	RS.
South Arcot Division. Shatiatope Anicut System. Capital Account.			South Arcot Division. Tirukkóyilúr Anicut System. Capital Account.		
Works	508		Works	508	
Establishment	117	625	Establishment	117	625
Revenue Account. Pelandorai Anicut System.			Chingleput Division. Pálár Anicut System. Capital Account.		
Extensions and Improvements ...	220		Works	1,095	
Establishment	51	271	Establishment	252	1,347
Shatiatope Anicut System.					1,972
Extensions and Improvements ...	738				
Establishment	170	908	Reserve under 43. Minor Works and Navigation		1,087
Vriddhachalam Anicut System.					
Extensions and Improvements ...	720				
Establishment	166	886			
Chingleput Division. Pálár Anicut System.					
Extensions and Improvements ...	300				
Establishment	69	369			
Total ...		3,059	Total ...		3,059

5. Under paragraph 59, chapter XIV, Public Works Code, a formal allotment of funds is not required in the case of works continued from the previous year and likely to be completed in the current year with an expenditure not exceeding Rs. 500. This rule should be borne in mind in submitting future applications for modifications of allotments.

6. The necessity for the additional grants under Maintenance and Repairs for items 25 to 30 has not been stated in accordance with the instructions given in paragraph 2 of this office circular memo. No. 26 G., dated 14th September 1893. Pending receipt of the necessary explanation, the additional amounts applied for need not be sanctioned. It should be understood by the Superintending Engineer, V Circle, that it is highly desirable that expenditure on working expenses should be restricted as much as possible.

Madras, 21st Oct. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Chief Engineer for Irrigation,

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch,

Order—dated 31st October 1893, No. 911 I., Public Works.

The modifications of allotments proposed by the Chief Engineer for Irrigation are sanctioned.

2. The attention of the Superintending Engineer, V Circle, is drawn to paragraphs 5 and 6 of the foregoing endorsement.

3. The unappropriated net surrender of Rs. 10,174 will be credited to the reserve under "43. Provincial—Minor Works and Navigation" as shown below:—

	RS.
Works	8,172
Establishment	1,879
Tools and Plant	123
Total ...	10,174

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 911 I.

OCTOBER.

Funds

Certain modification of allotments in V Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 15th October 1893, No. 452 V.Z.

I have the honour to request that you will be good enough to obtain the sanction of Government to transfer Rs. 2,700 from the lump sum grant of Rs. 5,000 for Tank Restoration, Repair grant, to Tank Restoration Scheme, Major Original Works, "Kistnamma channel and its branch channels," estimate Rs. 8,600, sanctioned by the Chief Engineer, Tank Restoration Scheme, in his No. 55 T./7 of 1891–92. This estimate includes 11 estimates consisting of minor original works and repairs, but they are all grouped together and sanctioned as one estimate under "Major Original Works."

2. The Executive Engineer suggests the above transfer for want of sufficient estimates under Tank Restoration Scheme, Repair grant.

Order—dated 31st October 1893, No. 912 I., Public Works.

The following transfer of funds is sanctioned :—

Irrigation.
43 Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Tank Restoration Works.
Vizagapatam Division.

From	RS.	*To*	RS.
Repairs	2,700	Major Original Works. Kistnamma channel and its branch channels	2,700

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras
PUBLIC WORKS.

Dated October, 31st.

Recd. *Enst.*

G.O., 31st Oct. 1893, No. 912 I.

OCTOBER.

Funds

Sanctioning certain transfer of — on account of Tank Restoration Works, Vizagapatam division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

No. 162 I.

Note by the Chief Engineer for Irrigation.

In his letter, No. 1461 K.S., dated 7th September 1893, the Superintending Engineer, II Circle, applied for the following additional allotments for the Gudiváda division :—

42. Major Works (Working Expenses)—

	RS.
Extensions and Improvements	2,500
Maintenance and Repairs	10,000
Tools and Plant	1,200

In this office memorandum No. 156 K.S., dated 15th idem, he was requested to report whether the whole or any portion of these amounts cannot be met by transfer from the existing grants for other divisions. No reply has yet been received to this reference ; but in the orders on the Superintending Engineer's second application for modifications of allotments, the grant for the Gudiváda division under Maintenance and Repairs was augmented by Rs. 5,000. The Superintending Engineer, I Circle, reports in his No. 1627 G.D., dated 10th October 1893, that Rs. 2,000 can be spared from the Gódávari Eastern division under "42. Major Works (Working Expenses), Extensions and Improvements. This sum may be transferred to meet in part the demand of Rs. 2,500 for the Gudiváda division under the same head.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

24th Oct. 1893.

Order—dated 31st October 1893, No. 913 I., Public Works.

The following transfers of funds are sanctioned :—

Irrigation.
42. Major Works (Working Expenses).

From Gódávari Delta System. Gódávart Eastern Division.	RS.	*To* Kistna Delta System. Gudiváda Division.	RS.
Extensions and Improvements ...	2,000	Extensions and Improvements ...	2,000
Establishment	460	Establishment	460
Total ...	2,460	Total ...	2,460

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 913 I.

OCTOBER.

Funds

Sanctioning certain transfers of — on account of additional allotments required for Gudiváda division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 16th September 1893, No. 1530 G.D.

I have the honour to submit, herewith, the usual annual statements A, A-I, B, C and D showing navigation receipts and charges of the Gódávari system of canals, for the official year 1892–93.

2. The subjoined statement shows the receipts and charges of the year as compared with those of the previous year:—

—	1892–93.	1891–92.	Increase.	Decrease.
	RS.	RS.	RS.	RS.
Receipts.				
1. License fees for Government boats	4,652	4,707	..	55
2. Do. for steamers and dredges	420	275	145	..
3. Do. for staff and jolly boats	159	159	..	..
4. Do. for passenger boats	3,572	4,067	..	495
5. Do. for cargo boats	34,285	33,184	1,101	..
6. Do. for steamers (private)	112	..	112	..
7. Do. for miscellaneous (including private and pleasure boats and fees for numbering boats)	724	664	60	..
8. Tolls on all kinds of boats and rafts	51,820	51,009	811	..
9. Rents of staff boats	2,075	2,222	..	147
10. Approximate navigation receipts from Kovur-Munjair junction canal credited to Incorporated Local and 43. Minor Works and Navigation	— 200	..	— 200	..
11. Profit on boat office	4,515	..	4,515	..
Refund of navigation receipts	— 12	..	..	..
Total ..	1,02,122	96,287	6,544	697
Charges.				
12. Navigation establishment including Boat Superintendent ..	23,418	23,463	..	45
13. Lock and lock weir repairs	29,734	17,089	12,645	..
14. Navigation buildings	232	477	..	245
15. Towpath maintenance	956	1,136	..	180
16. Dredging	8,616	5,764	2,852	..
17. Share of canal maintenance	18,948	21,543	..	2,595
18. Repairs of staff boats	1,513	1,791	..	278
19. Miscellaneous (including any charges not appertaining to the above items)	4,488	1,680	2,808	..
Total ..	87,905	72,943	18,305	3,343

Receipts.

3. The increase under item 2 is due to another Priestman's dredge having been licensed this year.

4. The decrease under item 4 is owing to a greater number of boats plying on toll tickets. The increase under item 5 is due to more cargo boats having been licensed than in 1891–92.

5. The increase under item 6 is due to a steamer of Messrs. Hall, Wilson and Co. being licensed.

6. The increase under item 8 is due to a large number of boats plying on toll tickets.

Charges.

7. The large increase under item 13 "lock and lock weir repairs" is due to new gates having been fitted during the year to Choppella, Samalkót and Vella locks in the Eastern division, Gódávari, and providing upper and lower gates to Peravally, Kavitem locks and upper gates to Ellore lock, and rebuilding the left chamber wall of Kavitem lock in the Gódávari Western division. The increase under item 16 is on account of more dredging in the Samalkót and Cocanada canals having to be done than in the previous year.

8. The decrease under item 17 is due to less expenditure having been incurred under (2) main canals and branches than in the previous year.

9. The increase under item 19 is owing to the collection of stone for apron of Gunnaram aqueduct, Gunnaram canal and repairs to the under-tunnel of Vridha-Gowtami drain bank canal of Central delta.

10. It will be seen from statement D that during the year under review punishments in 106 cases were inflicted for infringement of navigation rules against 97 cases in the previous year. Of this number, 51 cases were on account of either not having a man in charge of boat, or not having a light, and masts down when moored, also for not mooring fast stem and stern to the bank in a single line under regulation 26 of the navigation bye-laws.

Enclosures.

A.—Statement of receipts and charges, Gódávari delta navigation, for the official year 1892–93.

Receipts of the official year 1892–93.		Charges for the official year 1892–93.	
Description.	Amount.	Description.	Amount.
	RS.		RS.
License fees for Government boats	4,652	(1) Navigation establishment including Boat Superintendent	23,418
Do. for steamers and dredges ..	420	(2) Lock and lock weir repairs	29,734
Do. for staff boats and jolly boats ..	159	(3) Navigation buildings	232
Do. for passenger boats	3,572½	(4) Towpath maintenance	956
Do. for cargo boats	34,285	(5) Dredging	8,616
Do. for steamers (private)	112	(6) Share of canal maintenance	18,948
Do. for miscellaneous (including private boats and pleasure boats and duplicate license fees)	440	(7) Repairs of staff boats	1,513
Tolls on Government steamers and dredges ..	200	(8) Charges for painting numbers on boats ..	277
Do. on passenger boats	11,723½	(9) Miscellaneous (including charges not appertaining to the first 8 items) ..	4,211
Do. on cargo boats	25,380		87,905
Do. on miscellaneous	159		
Do. on rafts	14,199½	Interest at 2 per cent. on capital outlay during the year on navigation works proper ..	16
Rents collected from staff boats	2,075		
Tolls of private steamers	158	Interest for the year on capital outlay on navigation works proper to end of 1891–92 at 4 per cent.	42,159
Fees collected for painting numbers on boats ..	283½		
Approximate navigation receipts from Kovur-Munjair junction canal credited to Incorporated Local and 43. Minor Works and Navigation.	— 200		
Profit on Boat office at end of 1892–93 ..	4,515		
Refunds of navigation receipts	— 12		
	1,02,122		
Loss ..	27,958		
Total .	1,30,080	Total ..	1,30,080

A.-I.—Statement of Capital outlay on Navigation works proper of the Gódávari delta from the year 1870–71, inclusive.

Section of delta.	To end of 1891–92.	For 1892–93.	Total.
	RS.	RS.	RS.
Eastern delta	3,45,992	* 791	3,46,783
Central do.	2,58,150	24	2,58,174
Western do.	4,49,832	..	4,49,832
Total ..	10,53,974	815	10,54,789

* Represents the outlay incurred on constructing new head lock at Vizeswaram.

B.—Statement showing the Navigation receipts for the official year 1892–93.

Particulars.	Official year 1891–92. Class.	Total number.	Measured tonnage licensed at 50 cubic feet per ton.	Number of passengers licensed to carry.	Amount of license fees and tolls. RS. A. P.	Official year 1892–93. Class.	Total number.	Measured tonnage licensed at 50 cubic feet per ton.	Number of passengers licensed to carry.	Amount of license fees and tolls. RS. A. P.
License fees for Government boats ..	..	64	1,883	..	4,707 0 0	..	63	1,861	..	4,652 0 0
Do. for steamers and dredges.	..	2	55	..	275 0 0	..	3	84	..	420 0 0
Do. for staff boats and jolly boats	1st & 2nd.	16	..	..	159 0 0	1st & 2nd.	16	..	..	159 0 0
Do. for passenger boats ..	1st.	..	..	..	..	..	..	..	..	..
Do. for do. ..	2nd.	82	1,554	3,987	4,067 0 0	2nd.	76	1,521	3,745	3,572 8 0
Do. for cargo boats ..	..	641	15,287	..	33,184 8 0	..	657	16,138	..	34,285 0 0
Do. for steamers (private) ..	..	..	..	..	..	..	..	..	..	..
Do. for miscellaneous (including private boats and pleasure boats and duplicate license fees).	..	..	..	..	..	..	1	31	..	112 0 0
Tolls on Government steamers and dredges	..	45	..	..	393 0 0	..	65	..	..	440 0 0
Tolls on passenger boats	..	..	..	..	123 0 0	..	..	..	..	200 0 0
Do. on cargo boats	..	..	..	..	9,901 8 0	..	..	..	..	11,723 8 0
Do. on miscellaneous	..	..	..	..	23,746 0 0	..	..	..	..	25,380 0 0
Do. on rafts	..	..	..	..	120 0 0	..	..	..	..	159 0 0
Rents collected from staff boats ..	..	..	..	..	17,118 7 0	..	..	..	..	14,199 8 0
Tolls on private steamers	..	..	..	..	2,222 0 0	..	..	..	..	2,075 0 0
Fees collected for painting numbers on boats	..	..	..	..	..	..	..	..	..	158 0 0
Approximate navigation receipts from Kovur-Munjair junction canal credited to Incorporated Local and 43. Minor Works and Navigation..	..	..	..	..	270 10 0	..	..	..	..	283 8 0
Profit on boat office	..	..	..	..	..	..	..	..	..	− 200 0 0
Refunds of navigation receipts ..	..	..	..	..	..	..	..	..	..	4,515 0 0
	..	..	..	..	..	..	..	..	..	− 12 0 0
Total ..	..	850	18,779	3,987	96,287 1 0	..	881	19,635	3,745	1,02,122 0 0

C.—Statement showing the total maintenance charges on navigable canals of the Gódávari delta for the year 1892–93.

Description.	Total charges for 1892–93.	Debitable to navigation.		Debitable to navigation.	
		Rate.	Amount.	Rate.	Amount.
	RS.		RS.		RS.
1. Navigation establishment	23,418	Whole.	23,418	..	..
2. Locks and weirs repairs	29,734	,,	29,734	..	..
3. Navigation buildings	232	,,	232	..	..
4. Towpath maintenance	956	,,	956	..	..
5. Dredging	8,616	,,	8,616	..	..
6. Share of canal maintenance	(a) 75,795	One-fourth.	18,948	Three-fourths.	56,847
7. Repairs of staff boats	1,513	Whole.	1,513	..	..
8. Charges for painting numbers on boats ..	277	,,	277	..	..
9. Miscellaneous (including charges not appertaining to the first items general)	(b) 16,843	One-fourth.	4,211	Three-fourths.	12,632
Total ..	1,57,384	..	87,905	..	69,479

(a) This amount represents expenditure on the following items :—
- (1) Repairs to canal banks (One-fourth of this is chargeable to navigation).
- (2) Silt clearances (Do. do.).
- (3) Mile and avenue coolies (Do. do.).

(b) This item represents expenditure on repairs to masonry works other than locks and weirs (One-fourth of this is charged to navigation).

D.—Memorandum showing the offences against Navigation Rules and Regulations during the official year 1892-93.

Nature and description of heads.	Rule No. 1, for plying on canal without a toll-ticket or license. Boat number.	Number of days stopped.	Rule No. 7, for taking freight from passengers and then refusing to take them throughout the journey. Boat number.	Number of days stopped.	Rule No. 9, for conveying greater quantity of cargo than registered tonnage. Boat number.	Number of days stopped.	Rule No. 20, for not allowing sufficient free-board. Boat number.	Number of days stopped.
Passenger boats ..	T.T. 23087 ,, 21646 ,, 21526 ,, 21527 ,, 30403 ,, 30448 ,, 30450 ,, 30461 ,, 21529 ,, 30470 ,, 30478 ,, 30315 ,, 31084	7 3 3 3 3 3 3 1 2 4 4 7 7	T.T. 29527 ,, 21374 L. 1844 T.T. 21075 L. 3236 T.T. 21876 ,, 20623 ,, 21741 L. 3233	7 3 2 2 3 1 2 2 1	T.T. 29385	10	T.T. 28494 ,, 28298 L. 3236 L. 1840 T.T. 29050 ,, 29506 L. 3240 ,, 3232 ,, 1840	10 1 2 7 $1\frac{1}{2}$ $1\frac{1}{2}$ 1 1 1
Cargo boats ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	L. 3488 ,, 3489 T.T. 29658	1 1 1

Nature and description of heads.	Rule No. 21, for mooring boat on towpath side. Boat number.	Number of days stopped.	Rule Nos. 22 and 23, for unloading cargo at locks and stacking on canal land. Boat number.	Number of days stopped.	Rule No. 25, for mooring vessels within limits fixed by notice boards. Boat number.	Number of days stopped.	Rule No. 26, for not having a man in charge and for not having light and masts down when moored. Boat number.	Number of days stopped.
Passenger boats ..	L. 1854	1	T.T. 21271 L. 1856 T.T. 21713 ,, 21936	3 1 6 1	..	..	L. 3250 L. 3504 T.T. 21590 ,, 21642 ,, 21609 ,, 21571 ,, 30635 ,, 30497 ,, 30414 ,, 30413 ,, 30459 ,, 30436 ,, 30478 ,, 30487 ,, 30450 ,, 30459 ,, 31006 ,, 31008 ,, 30421 ,, 30475 ,, 30499 ,, 30483 ,, 30480 ,, 30490 ,, 30461 ,, 30455 ,, 30455 ,, 30413 ,, 30416 ,, 30442 ,, 21706 ,, 31081 ,, 26027 ,, 21831 ,, 18797 L. 1838 T.T. 29802 ,, 30899 ,, 30997 L. 1938 T.T. 30053 ,, 21831 ,, 30075 ,, 21830 ,, 21847 ,, 30068 L. 3204 T.T. 30903 ,, 29839 L. 1854 T.T. 30104	7 3 1 1 1 1 2 2 2 2 2 2 3 3 3 3 3 5 5 3 3 3 3 3 3 3 2 2 2 2 2 2 3 7 7 7 5 6 5 5 4 4 4 4 4 4 4 3 4 1 2
Cargo boats ..	L. 3890	4	L. 4015	3	T.T. 18758 ,, 28838 ..	10 10 ..	..	..

Nature and description of heads.	Rule No. 27, for not having a light on boat. Boat number.	Number of days stopped.	Rule No. 28, for not giving way to boats going up current. Boat number.	Number of days stopped.	Rule No. 30, for not keeping boat clean and in proper repair. Boat number.	Number of days stopped.	Rule No. 31, for interfering with lock gearing, &c. Boat number.	Number of days stopped.	Rule No. 32, for not stopping when required to stop by duly authorized officer for examination. Boat number.	Number of days stopped.	Rule No. 33, for not having always ticket or license on board and for not producing it when called for by any duly authorized officer. Boat number.	Number of days stopped.
Passenger boats ..	T.T. 31678 ,, 31032	4 2	..	..	L. 3250 T.T. 30632	3 10	T.T. 27088 L. 3236 T.T. 21947	2 3 1	L. 1852	1	T.T. 30635 ,, 26027 ,, 31046	1 4 5
Cargo boats ..												

Office-note to the Examiner, Public Works Accounts, dated 2nd October 1893, No. 254.
" from " " " 18th " " " 1445 D.

No. 165 I.

Submitted to Government.

2. The Examiner of Public Works Accounts reports that the total navigation receipts during 1892–93 amount to Rs. 1,02,122 and not Rs. 1,02,134 as shown in the statements received from the Superintending Engineers the difference Rs. 12 being refunds of navigation receipts in the Gódávari Eastern division. The necessary corrections have been made in the statements.

24th Oct. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

Order—dated 31st October 1893, No. 914 I., Public Works.

Recorded.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 914 I.

OCTOBER.

Godavari System of Canals

Note by the Chief Engineer for Irrigation on the statements showing navigation receipts and charges of the — for 1892–93, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 21st September 1893, No. 878 T.C.

I have the honour to request that the following modification of allotments may be sanctioned at an early date:—

Item No.	—	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.	
			Reduction.	Increase.	Reduction.	Increase.
	IRRIGATION.	RS.	RS.	RS.	RS.	RS.
	43. Minor Works and Navigation.					
	Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.					
	Original Works.					
	Ordinary.					
	Trichinopoly Division.					
1	Improving the Mullipady tank, revised estimate Rs. 2,750 sanctioned in G.O., No. 657 I. of the 25th July 1893	..	..	2,750	..	2,750
2	Revetting a portion of the Arasangudy-Karamuthukulam, estimate Rs. 3,180 sanctioned in G.O., No. 430 I., dated 4th May 1893. Grant as per Irrigation Chief Engineer's memo. No. VI/28 T.C. of 8th September 1893	1,380	750	..	750	..
3	Minor original works, lump sum	6,000	1,000	..	1,000	..
4	Repairs, lump sum	25,000	1,000	..	1,000	..
	Total ..	..	2,750	2,750	2,750	2,750
	Tank Restoration Works.					
	Original Works.					
	Madura Division.					
5	Panayur-Periyakommoi and channel, estimate Rs. 6,830 sanctioned in G.O., No. 542 I. of 15th June 1892 ..	5,000	1,180	..	1,180	..
6	No. 2 Pudukulam tank improvements, estimate Rupees 3,660 sanctioned by the Chief Engineer in Register No. 70 T./M. of 1892-93	955	320	..	320	..
7	No. 96 Orappanoor-Periyakommoi improvements, revised estimate for Rs. 4,550 submitted for sanction in No. 492 M.D. of 23rd August 1893	..	..	1,500	..	1,500
	Total ..	..	1,500	1,500	1,500	1,500

2. *Items* 1 *to* 4.—Modifications proposed with reference to your memorandum No. VI/28 T.C., dated 8th September 1893.

Item 5.—Surrendered to meet in part the demand for item 7.

Item 6.—Work completed and the balance of grant is proposed to be transferred to item 7.

Item 7.—The completion of this work commenced last year is necessary.

Order—dated 31st October 1893, No. 915 I., Public Works.

The modifications of allotments proposed by the Superintending Engineer, VI Circle, are sanctioned.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 915 I.

OCTOBER.

Funds

Certain modification of allotments in VI Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Colonel A. T. FRASER, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 14th October 1893, No. 1819.

I have the honour to forward, for sanction of Government, a statement showing the modification of allotments that are required under Irrigation.

Enclosure.

Statement of modification of allotments under Irrigation.

Item No.	Division.	Name of work.	Existing grant.	Proposed increase or decrease.	Grant after modification.	Remarks.
		43. Irrigation and Navigation.				
		Works for which neither Capital nor Revenue Accounts are kept.				
1	Bellary ..	Bella channel improvements ..	1,000	1,100	2,100	Works are in progress.
2		Basavannah channel do. ..	500	400	100	Works completed.
3		Ramsagar channel do. ..	1,500	300	1,800	Works are in progress.
4		Thoortha channel do. ..	1,800	3,400	5,200	Works are in progress.
5		Yellari tank	1,800	1,200	600	Work completed.
6		Raya channel improvements ..	8,000	3,200	4,800	Surrendered owing to the cancelment of the estimate in G.O., No. 768 I., dated 2nd September 1893.
		Irrigation Cess Fund.				
7		Raya channel improvements ..	..	3,400	3,400	Required to meet estimates sanctioned in G.O., No. 768 I., dated 2nd September 1893.
8		Bella channel do. ..	..	600	600	Required from Cess fund to meet the expenditure on incomplete works of last year.
9		Basavannah channel improvements.	..	3,500	3,500	Required from Cess fund to meet the expenditure on incomplete works of last year.
10		Thoortha channel improvements ..	10,000	2,000	8,000	The channels being full of water, progress is retarded.
		Irrigation and Navigation.				
		Works for which Capital and Revenue Accounts are kept.				
		Capital Account.				
11	Cuddapah ..	Sagiléru upper project ..	30,332	10,332	20,000	Work only commencing and it is impossible to bring up expenditure till tenders now inviting are accepted and contract operations begun.
		Irrigation and Navigation.				
		Works for which neither Capital nor Revenue Accounts are kept.				
12		Nagaripad anicut	5,000	4,500	9,500	To meet extra work under the revised estimate now being checked.
		Agricultural Works.				
13		Repairs—River embankments ..	4,000	1,500	2,500	Not required as there are no estimates.

Statement of modification of allotments under Irrigation—*cont.*

Item No.	Division.	Name of work.	Existing grant.	Proposed increase or decrease	Grant after modification.	Remarks.
		IRRIGATION AND NAVIGATION.				
		Works for which Capital and Revenue Accounts are kept.				
		Cumbum Tank.				
14	Kurnool ..	Capital Account	3,000	3,000	..	The Executive Engineer has made these sums available.
15		Revenue Account, Extension, &c.	2,191	2,000	191	
		IRRIGATION AND NAVIGATION.				
		Works for which neither Capital nor Revenue Accounts are kept.				
16		Minor works, lump sum ..	2,000	200	1,800	Explanation already given, *vide* this office No. 1506, dated 16th Sept. 1893.
17		Improvements to Markapur tank ..	..	3,200	3,200	
18		Do. to Kanagal tank ..	..	3,000	3,000	
		Tank Restoration Scheme Works.				
19		Original works, minor ..	..	1,500	1,500	Amount required to meet expenditure that is being incurred.
20		Repairs	..	500	500	
		42. MAJOR WORKS—WORKING EXPENSES.				
21		Maintenance and repairs ..	76,500	2,500	79,000	Required to cover the cost of conservancy establishment transferred from general establishment to works as per G.O., No. 840 W., dated 28th March 1893.

No. 156 I.

Submitted to Government.

2. Under "Minor Works for which neither Capital nor Revenue Accounts are kept," the demands for items 1, 3 and 4 in the Bellary division aggregate Rs. 4,800 and may be met from the corresponding amount surrendered from items 2, 5 and 6. From the sum of Rs. 2,000 not required for item 10, Rs. 600 applied for for item 8 may be appropriated, the balance, Rs. 1,400, being transferred to meet in part the demand of Rs. 3,500 for item 9. The outlay of Rs. 3,400 proposed to be incurred on the sanction accorded in G.O., No. 768 I., dated 2nd September 1893, should be deferred till next year, as there are no funds available to meet the demand. The amount not required for item 13 has already been withdrawn in the order on Superintending Engineer's endorsement No. 1699, dated 7th October 1893. Rs. 200 given up for item 16 may be transferred to meet in part the demand for item 17, leaving Rs. 3,000 still to be provided. There are no funds available to provide the additional grant of Rs. 2,500 applied for maintenance and repairs to the Kurnool-Cuddapah canal; the cost of the conservancy establishment should, therefore, be met from the unexpended balances of the existing grants for this canal under "42. Major Works (Working Expenses)."

3. The following transfers of funds may be sanctioned :—

Irrigation.
43. Minor Works and Navigation.

From			*To*	
Minor Works for which Capital and Revenue Accounts are kept. Capital Account. Sagiléru Project. Cuddapah Division.			Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D. Ordinary Works. Original Works. Cuddapah Division.	
	RS.	RS.		RS.
Works	10,332		Nagaripad anicut	4,500
Establishment	2,376			
	——	12,708		

From

	RS.	RS.
Kurnool Division.		
Cumbum Tank System.		
Capital Account.		
Works	3,000	
Establishment	690	
	——	3,690
Revenue Account.		
Extensions and Improvements.	2,000	
Establishment	460	
	——	2,460
Total ...		18,858

To

	RS.	RS.
Kurnool Division.		
Markapur tank	3,000	
Kanagal tank	3,000	
	10,500	
Establishment	2,415	
Tools and plant	158	
	——	13,073
Tank Restoration Works.		
Kurnool Division.		
Minor Original Works ...	1,500	
Repairs	500	
	2,000	
Establishment	460	
Tools and plant	30	
	——	2,490
Reserve under "43. Provincial—Minor Works and Navigation."		
Works	2,646	
Establishment	609	
Tools and plant	40	
	——	3,295
Total ...		18,858

20th Oct. 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

Order—dated 31st October 1893, No. 916 I., Public Works.

The modifications of allotments proposed by the Chief Engineer for Irrigation are sanctioned.

2. The Superintending Engineer, III Circle, will report, at an early date, the component works of the Sagiléru project, the grants for which have been reduced.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, III Circle.
,, Examiner, Public Works Accounts.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 916 I.

OCTOBER.

Funds

Certain modification of allotments in III Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. W. MARTIN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Dáchépalle, 16th September 1893, No. 256 B.C.

I have the honour to forward, herewith, for your approval and sanction of Government, statement of floating plant in the Buckingham canal for 1894–95.

2. The probable cost of upkeep has been estimated at only Rs. 680 against Rs. 660 for 1893–94; to this, Rs. 520 have also been added for the upkeep of ferry ballacuts and boats against Rs. 620.

Enclosures.

Statement of the Irrigation floating plant in the Buckingham Canal Division showing the estimated cost of upkeep during the year 1894–95.

Part II (Barges, Boats, Punts and Staff Boats).

Register Number.	Detail of plant. Description of boat.	Measurement of plant. Date of construction.	Length.	Breadth.	Depth.	Draft when loaded.	Tonnage according to Navigation rules measurement.	Value of plant. Original.	Present book value.	Proposed cost of upkeep in 1894–95.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
								RS.	RS.	RS.	
2	Punt	..	..	..	..	..	..	1,964	788	50	Continually require repair, punts being wooden and therefore unsuitable for constant use in salt water unless hulls are protected.
6	Do.	..	..	..	..	..	..	1,964	788	50	
7	Punt with wooden ribs.	..	..	..	..	..	..	1,870	187	50	
8	Punt	..	..	..	..	..	..	1,964	788	50	
9	Do.	..	..	..	..	..	..	1,964	788	50	
4	Staff boat, first class ..	..	..	..	..	..	..	..	..	..	Sold in July 1893, *vide* G.O., No. 333 I., dated 13th April 1893.
10	Do. do. ..	1893	37′ 10″	5′ 10″	2′ 9″	1′ 9″	Gross 12 Net 10	1,742	1,597	70	In good order.
5	Do. second class ..	..	..	..	..	..	..	990	329	80	Need repair.
7	Travelling boat ..	..	..	..	..	..	..	700	468	100	
8	Do. ..	..	..	..	..	..	..	700	468	100	
9	Staff boat, second class.	..	..	..	..	..	..	900	675	80	
										680	
3	Budgerow, third class ..	..	..	..	..	..	..	..	..	..	Sold in July 1893, *vide* G.O., No. 374 I., dated 28th April 1893.
	Ferry boats and ballacuts.	..	..	..	..	..	..	..	..	520	
	Total ..	..	..	..	..	..	..	..	..	1,200	

Rules for finding present book value.

1. Boats and barges to be reduced 10 per cent. every year, and the amount of special repair, if any, to be added thereto.

2. Staff boats to be reduced by one-twelfth of their original cost for each year of their life.

Detailed approximate estimate of the annual cost of manufacture of Irrigation floating plant, Buckingham Canal Division.

Particulars.	Staff boat, 1st class, No. 10.	Staff boat, 2nd class, Nos.		Travelling boats, Nos.		Punt with wooden ribs, No. 7.	Punts Nos.				Ferry boats, 45.	Balla-cuts, 2.
		5.	9.	7.	8.		2.	6.	8.	9.		
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching..	10	6	6	10	10	20	20	20	20	20	45	8
Caulking	..	15	15	20	20	10	10	10	10	10	210	20
Painting	35	30	30	25	25	5	5	5	5	5	45	4
Ropes, &c.	5	5	5	5	5	5	5	5	5	5	45	2
Dammering	..	9	9	5	5	5	5	5	5	5	45	4
Sundry repairs ..	20	15	15	35	35	5	5	5	5	5	90	2
Total ..	70	80	80	100	100	50	50	50	50	50	480	40

Abstract showing the comparison of details between the estimated maintenance cost of floating plant in the Buckingham Canal Division for 1893–94 and 1894–95.

—	Number.		Original value.		Book value.		Cost of upkeep.		Remarks.
	1894–95.	1893–94.	1894–95.	1893–94.	1894–95.	1893–94.	1894–95.	1893–94.	
			RS.	RS.	RS.	RS.	RS.	RS.	
Staff boat, 1st class, No. 10 ..	1	1	1,742	1,742	1,597	1,742	70	..	
Staff boat, 2nd class, Nos. 5 and 9.	2	2	1,890	1,890	1,004	1,162	160	100	
Travelling boats, Nos. 7 and 8 ..	2	2	1,400	1,400	936	1,052	200	100	
Punts with wooden ribs, No. 7 ..	1	1	1,870	1,870	187	374	50	65	
Punts Nos. 2, 6, 3 and 9 ..	4	4	7,856	7,856	3,152	3,936	200	240	
	10	10	14,758	14,758	6,876	8,266	680	505	
Ferry boats	45	48	..	..	..	..	480	580	
Ballacuts	2	2	..	..	..	..	40	40	

Madras,
6th September 1893.

(Signed) A. S. RUSSELL,
Executive Engineer, Buckingham Canal.

Order—dated 31st October 1893, No. 917 I., Public Works.

The estimate of the cost of upkeep of the floating plant of the Buckingham canal is approved; Rs. 1,200 will be provided on this account in the budget estimates for "Minor Works and Navigation" for 1894–95.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31st.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 917 I.

OCTOBER.

Floating Plant

Estimate of the cost of upkeep of the — of the Buckingham canal for 1894-95, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

Office-note from the Examiner, Public Works Accounts, dated Madras, 18th October 1893, No. 1446 D.

With reference to the statement of completion reports printed with G.O., No. 779 I., dated 9th September 1893, I beg to point out that the actual expenditure incurred on "No. 8 Gangapur aqueduct, Mahánadi canal," is Rs. 20,426 to end of August 1893 and not Rs. 20,401 as entered in the statement.

2. In consequence of this the net saving should be Rs. 1,564 and the balance for unforeseen works reduced accordingly.

Order—dated 31st October 1893, No. 918 I., Public Works.

Under the circumstances reported by the Examiner of Public Works Accounts, the existing balance for unforeseen works of the Rushikulya project will be reduced by Rs. 25, being the excess amount credited thereto in G.O., No. 779 I., dated 9th September 1893. The balance now available is Rs. 32,308.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Joint Secy. to Govt., P.D.W.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated October, 31*st*.

Recd. *Encl.*

G.O., 31st Oct. 1893, No. 918 I.

OCTOBER.

Rushikulya Project

Reducing the balance available for unforeseen works of the — by Rs. 25, the amount over-credited thereto in G.O., No. 779 I., dated 9th September 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE,

IRRIGATION,

FOR THE MONTH OF OCTOBER 1893.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Land.—Notification for the acquisition of — required for the Periyár works, ordered to be published in the *Fort St. George Gazette.*	4th Oct. 1893, No. 850 I.	......
Land.—Notification for the acquisition of — required for the restoration of the tank bund in Gopavaram village, Nandyal taluk, Kurnool, ordered to be published in the *Fort St. George Gazette.*	11th do. do. No. 859 I.	......
Land.—Notification for the acquisition of — required for the straight cut of Thevarayan Pettai channel, Cauvery delta system, ordered to be published in the *Fort St. George Gazette.*	13th do. do. No. 860 I.	......
Erratum.—Ordered that the — showing the correct spelling of a word misprinted in notification published under "Acquisition of lands" at page 1066, Part I of the *Fort St. George Gazette* of 12th September 1893, be published in the *Fort St. George Gazette.*	13th do. do. No. 861 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, III Circle.	16th do. do. No. 862 I.	4th Jan. 1892, No. 11 W. 23rd Aug. 1892, No. 2345 W. 16th Nov. 1892, No. 955 I. 1st March 1893, No. 202 I. 11th Aug. 1893, No. 702 I. 18th Sept. 1893, No. 794 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, IV Circle.	16th do. do. No. 863 I.	16th Feb. 1893, No. 144 I. 24th Jan. 1893, No. 71 I. 8th June 1893, No. 504 I. 24th Aug. 1893, No. 737 I. 21st Sept. 1893, No. 821 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Land.—Notification for the acquisition of — required for diversion of Vasista left bank at Rámachandrapuram section, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	18th Oct. 1893, No. 866 I.	31st Jan. 1893, No. 90 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, I Circle.	18th do. do. No. 867 I.	21st Aug. 1893, No. 723 I. 18th Sept. 1893, No. 795 I.
Minor irrigation works.—Proceedings, Board of Revenue, reviewing statements on — from April to July 1893, recorded.	21st do. do. No. 869 I.	......
Cess on irrigation.—Proceedings, Revenue Department, on the levy of the voluntary — under the Kalingaroyen channel, Coimbatore district, communicated to the Superintending Engineer, IV Circle.	23rd do. do. No. 870 I.	......
Tank.—Proceedings, Revenue Department, sanctioning the abandonment of the Tekkalapad — in Sattenapalle, Kistna district, as a source of irrigation, communicated to the Superintending Engineer, II Circle.	23rd do. do. No. 871 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, No. I Periyár division.	24th do. do. No. 878 I.	......
Sinhalese pipe sluice.—The sketch of a —, together with a report received from the Government of Ceylon, forwarded to the Superintending Engineer, IV Circle.	26th do. do. No. 886 I.	......
The Government of Ceylon addressed ...	26th do. do. No. 887 I.	......
Land.—Notification for the acquisition of — required for raising the right bank of Bank canal in Kottalanka, Amalápuram taluk, Gódávari, ordered to be published in the *Fort St. George Gazette.*	27th do. do. No. 891 I.	......
Land.—Notification for the acquisition of — required for an under-tunnel across Kávéripákkam channel, Pálár anicut system, ordered to be published in the *Fort St. George Gazette.*	27th do. do. No. 892 I.	13th April 1893, No. 326 I.
Land.—Notification for the acquisition of — required for the drainage channel and road culvert at 13th mile, Dornal road, to drain water from rear of Kanigiri reservoir tank bund, Sangam anicut project, ordered to be published in the *Fort St. George Gazette.*	27th do. do. No. 893 I.	......
Land.—Notification for the acquisition of — required for the eastern channel, minor channel 6 miles 410 feet left bank, minor branch channel 4,290 feet right bank, Sangam anicut project, ordered to be published in the *Fort St. George Gazette.*	27th do. do. No. 894 I.	......
Land.—Notification for the acquisition of — required for constructing a wooden trough across Chellayapollem drain, Sangam anicut project, ordered to be published in the *Fort St. George Gazette.*	27th do. do. No. 895 I.	......

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Periyár project.—E. form progress reports Nos. I and II Periyár divisions for September 1893, ordered to be forwarded to the Government of India.	30th Oct. 1893, No. 896 I.	1st June 1893, No. 2211 C. 4th July 1893, No. 2516 C. 27th July 1893, No. 2733 C. 29th Aug. 1893, No. 2970 C. 4th Sept. 1893, Nos. 769–70 I. 29th Sept. 1893, Nos. 842–43 I.
Forwarded	30th do. do. No. 897 I.	......
Land.—Notification for the acquisition of — required for the diversion of the channel supplying Gangaikondam-Sirukulam tank, Tinnevelly, ordered to be published in the *Fort St. George Gazette.*	31st do. do. No. 898 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, II Circle.	31st do. do. No. 899 I.	1st June 1893, No. 485 I. 7th March 1893, No. 219 I. 24th Aug. 1893, No. 736 I. 28th Sept. 1893, No. 841 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of June 1893, V Circle.	31st do. do. No. 900 I.	18th Sept. 1893, No. 793 I.
Vasista-Gódávari right bank.—Proceedings, Local and Municipal Department, sanctioning an allotment of Rs. 3,320 required by the District Board being the contribution towards the cost of raising the — from Chinchinada ferry to Narsapur, communicated to officers concerned.	31st do. do. No. 909 I.	......